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THE TREATMENT OF DELIRIUM TREMENS

KARL M. BOWMAN, M.D.
HERMAN WORTIS, M.D.
AND
SYLVAN KEISER, M.D.
NEW YORK

Beyond the fact that delirium tremens occurs in habitually severe and chronic alcoholism and that it frequently follows injuries, operations and acute infections, little is known of the actual etiologic factors at play. Since this syndrome was adequately and accurately described as long ago as 1813,[1] it seems remarkable that no real attempt has been made to study the physiologic and chemical changes which accompany it. The more recent therapies,[2] which have included various means of dehydration and repeated spinal drainage, are all based on the observation that at autopsy persons with delirium tremens frequently show cerebral edema. Such therapy, however, takes no account of the generalized dehydration and manifest toxicity which all these patients show and, furthermore, ignores many pathophysiologic phenomena which not only exist in these patients but are probably of at least equal importance.

In the prodromal period of delirium tremens the patient often experiences a disgust for alcohol sufficient to cause abstinence for several days. The acute gastritis and hepatitis which so many patients have often makes it impossible for them to retain anything by mouth, including alcohol. It is this type of abstinence which has often been mistakenly considered a cause rather than a result of delirium tremens. The studies of Piker[3] showed conclusively that between 75 and 90 per cent of patients have delirium tremens while still drinking. The administration of alcohol, therefore, either to prevent delirium tremens or as a subsequent therapeutic measure has no basis in fact and, furthermore, often presents an unsurmountable psychologic barrier in the further treatment of such patients. As additional proof of the minor importance of abstinence in the production of delirium tremens it is noteworthy that in only a few of the 10,000 alcoholic addicts admitted each year does delirium tremens develop in the ward. It is our impression that, even in these few, toxic and infectious factors play a far more important part in the production of the delirium.

Restraints are gradually being abolished in the treatment of delirious patients.[4] It is our belief that mechanical restraints are usually not necessary in the treatment of delirium tremens unless the nursing personnel is too limited to protect the patient from possible injury. Then it may be necessary to use hand restraints for a short period until the patient is quiet. Otherwise, if the patient is restrained for a longer period, much of the dehydration and exhaustion which occur follows his thwarted attempts to free himself.

Sedative medication is usually necessary, but here again a warning must be issued—particularly against the use of morphine. Not only does this drug raise the intracranial pressure[5] but it frequently masks the signs of an associated intracerebral or intra-abdominal injury. It has been aptly said that morphine not only puts the patient to sleep but also puts the physician to sleep. If after a thorough physical examination it is felt that sedative medication must be given in the interests of either the patient or the ward, paraldehyde, 2 or 3 fluidrachms (7 to 11 cc.) given by mouth or rectum, in repeated doses if necessary, is the drug of choice. In agreement with Piker and Cohn[6] we believe that paraldehyde is the most innocuous, the most rapidly eliminated and the most uniformly effective of all sedative medicaments in the treatment of the alcoholic delirium. If a continuous tub is available and the patient's temperature is not too high, we advocate hydrotherapy as a valuable agent in the treatment of alcoholic delirious states.

When these preliminary details have been cared for, we are confronted with the problem of readjusting the deranged metabolism. It has now been repeatedly confirmed that alcohol markedly decreases the oxygen consumption of the brain,[7] presumably like all narcotics by displacing the metabolites present at the surface of the brain.[8] Ordinarily the brain tissue has a respiratory quotient of unity, indicating that the brain feeds essentially on dextrose.[9] That this normal nutritive material is not available to the brain in the alcoholic delirium is suggested by the fact that in alcoholic dogs the

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From the Division of Psychiatry, Bellevue Hospital, and the Department of Psychiatry, New York University Medical College.

1. Sutton, Thomas: Tracts on Delirium Tremens, on Peritonitis, and on Some Other Internal Inflammatory Affections, and on the Gout, London, T. Underwood, 1813.
2. Cline, W. B., Jr., and Coleman, J. V.: The Treatment of Delirium Tremens, J. A. M. A. **107**: 404 (Aug. 8) 1936 (contains a complete bibliography). Piker and Cohn.[6]
3. Piker, Philip: On the Relationship of the Sudden Withdrawal of Alcohol to Delirium Tremens, Am. J. Psychiat. **93**: 1387 (May) 1937.
4. Messinger, Emanuel, and Amdur, Meyer K.: Abstract of "One Hundred Years of Non-Restraint," Am. J. Psychiat. **94**: 1307 (May) 1938.
5. Kennedy, Foster, and Wortis, S. B.: Modern Treatment of Increased Intracranial Pressure, J. A. M. A. **96**: 1284 (April 18) 1931.
6. Piker, Philip, and Cohn, J. V.: The Comprehensive Management of Delirium Tremens, Including Treatment Utilized in 300 Consecutive Cases, J. A. M. A. **108**: 345 (Jan. 30) 1937.
7. Yamakita, M.: Tohoku J. Exper. Med. **3**: 414, 496, 538 and 556 (Dec.) 1922.
8. Robertson, J. D., and Stewart, C. P.: The Effect of Alcohol on the Oxygen Uptake of Brain Tissue, Biochem. J. **26**: 65, 1932.
9. Wortis, Herman; Wortis, S. B., and Marsh, Frances I.: The Role of Vitamin C in Nerve Tissue Metabolism, Arch. Neurol. & Psychiat. **39**: 1055 (May) 1938.

respiratory quotient of the brain falls from unity to 0.8 or 0.9,[10] indicating either that carbohydrates are not available for use or that the brain by virtue of the insult suffered is unable to utilize available carbohydrate and must turn to other foodstuffs. At any rate, whatever the cause, it would seem important to make dextrose, the normal food of the brain, available. This carbohydrate may be supplied in any form, but orange juice, containing in addition vitamin C, is a readily digestible and easily obtained source of this material. Furthermore, alcoholic addicts seem to like it and are able to retain it. Recent unpublished work at Bellevue indicates that dextrose accelerates the elimination of alcohol and that, if insulin (average dose of 15 units) is added, alcohol disappears from the blood still more rapidly. In addition, it results in more rapid assimilation and utilization of carbohydrates. As there is evidence of hepatic dysfunction [11] in all cases of delirium tremens, administration of dextrose undoubtedly helps to remedy the deranged metabolic processes therein.

The empiric observations of Bowman and Keiser [12] revealed that disturbed alcoholic patients quiet down after the administration of sodium chloride, either by mouth or parenterally. Chemical studies [11] showed that the chloride content of the blood was either low or markedly diminished in these states. To remedy this defect, capsules containing 2 Gm. of sodium chloride are given every four hours to these patients. The administration of the substance serves two purposes: 1. It combats dehydration.[13] 2. Since the alcoholic delirium is associated with a marked acidosis resulting not only from accumulated lactic acid in the blood and spinal fluid [11] but also from retention [10] of carbon dioxide, there ensues a marked diminution in the alkali reserve of the body which is successfully combated by administration of the sodium ion.

Repeated feedings of a soft diet rich in vitamins is of inestimable value in the treatment of these patients. If possible, the diet should contain from 3,000 to 4,000 calories a day. It is now generally accepted that vitamins B and A play an important part in the normal metabolism of nervous tissue.[14] Furthermore, Jolliffe and Frank [15] demonstrated a high incidence of peripheral neuritis in alcoholic addicts admitted to the psychiatric department of Bellevue Hospital as a routine indicating a deficiency of vitamin B_1. Moreover, Wortis, Wortis and Marsh [16] have shown that patients in alcoholic delirium have subnormal amounts of vitamin C in the blood and cerebrospinal fluid, a defect not present in alcoholic addicts without neurologic or mental changes. Alcoholic pseudopellagra is a common occurrence in our wards. While no definite conclusions can be drawn from these facts, the observations emphasize the importance of nutritional factors in the production of the alcoholic delirium. In addition, there is reason to believe that vitamins A and C play an important part in preventing and combating infection.[17] Since it is complicating infections which make the prognosis bad in cases of delirium tremens, the importance of vitamin therapy in this respect should not be underestimated. All the vitamins are now available in concentrated form, and vitamins B and C may even be injected intravenously.

During the stage of active delirium patients are so toxic and dehydrated that any attempt to limit fluids because of the associated cerebral edema seems to us shortsighted. It has therefore been our practice to place these patients on a regimen of relative hydration, giving from 3,000 to 4,000 cc. of fluid a day.

Piker,[18] in a clinical evaluation of the use of fluids in delirium tremens, altered his original stand somewhat and suggested that fluids be given according to the patient's needs and not limited to less than 1,000 cc. a day, as he and Cohn [6] formerly suggested. We would go further than this and insist that unless general medical indications, such as edema, cardiac failure or nephritis, exist, fluids to the extent of 3,000 to 4,000 cc. a day be forced on all these patients. It has, in fact, been a not uncommon observation that the fluid itself acted as a sedative and that the patient immediately went to sleep, so that no further medication was necessary. High enemas should be given in a routine way both for the relief of chronic constipation, which is common in these cases, and for the definitely quieting effect they have on overactive, disturbed patients. They also provide additional fluids in dehydration.

Many alcoholic addicts have rigid pupils on admission. Failure to rule out syphilis may lead to serious consequences. At least 10 per cent of our patients with syphilis of the central nervous system are admitted to the hospital in an acutely alcoholic condition. Kennedy and Herman Wortis [19] have already stressed the importance of alcohol as a factor in the production of cranial injury. We wish therefore to make it clear that lumbar puncture performed on admission of these patients is for diagnostic purposes only and not for the specific treatment of delirium tremens.

The prognosis of delirium tremens is adversely affected by the presence of precipitating and complicating factors. It is therefore considered advantageous to work in close cooperation with the medical and surgical staffs of the hospital, and any patient who does not respond satisfactorily to our aforementioned treatment is seen in consultation with physicians on these services. The complications most usually encountered in delirium tremens are:

1. Cranial injuries, including fractures of the skull, contusions and lacerations of the brain and subdural and epidural hemorrhages. For these injuries we have found it inadvisable to use the routine dehydration therapy for head injuries [5] and have usually forced fluids. In cases of subdural and epidural hemorrhage, operation is of course necessary.[19]

2. Fractures, particularly of the extremities and ribs.

3. Infections of the lungs or of the upper part of the respiratory tract.

4. Focal infections which are often difficult to locate. The streptococcus is a frequent offending organism.

10. Himwich, H. E.; Nahum, L. H.; Rakieten, Nathan; Fazikas, J. F.; Du Bois, Delafield, and Gildea, E. F.: The Metabolism of Alcohol, J. A. M. A. **100:** 651 (March 4) 1933.
11. Bowman, K. M.; Jolliffe, N. H.; Wortis, Herman; Wortis, S. B., and Frank, P.: Chemical Studies in Delirium Tremens, to be published.
12. Bowman, K. M., and Keiser, Sylvan: Treatment of Disturbed Patients with Sodium Chloride Orally and Hypertonic Solutions Intravenously, Arch. Neurol. & Psychiat., to be published.
13. Talbott, J. H.: Heat Cramps, Medicine **14:** 323 (Sept.) 1935.
14. Wortis, S. B.: Metabolism of Brain Tissue: Vitamins and Enzymes in Brain Tissue, Bull. Neurol. Inst. New York **4:** 588 (April) 1936. Wortis, Herman: Vitamins in Nervous Health and Disease, New York State J. Med., to be published.
15. Jolliffe, W., and Frank, P.: Unpublished data.
16. Wortis, Herman; Wortis, S. B., and Marsh, F. I.: Vitamin C Studies in Alcoholics, Am. J. Psychiat. **95:** 891 (Jan.) 1938.
17. Eddy, W. H., and Daldorff, Gilbert: The Avitaminoses, Baltimore, Williams & Wilkins Company, 1937.
18. Piker, Philip: Clinical Evaluation of Use of Fluids in Treatment of Delirium Tremens, Arch. Neurol. & Psychiat. **39:** 62 (Jan.) 1938.
19. Kennedy, Foster, and Wortis, Herman: "Acute" Subdural Hematoma and Acute Epidural Hemorrhage: Study of Seventy-Two Cases of Hematoma and Seventeen Cases of Hemorrhage, Surg., Gynec. & Obst. **63:** 732 (Dec.) 1936.

5. Vasomotor collapse. The mechanism is not at all clear. Piker and Cohn [6] suggested that the etiologic factor may be toxic myocarditis and digitalized their patients as a routine. This suggestion is worth further consideration.

While we agree that the chief factors contributing to the clinical picture of delirium tremens are the somatic ones, e. g. infections, a lowered chloride content of the blood, lowered vitamin reserves, increased lactic acid in the blood and spinal fluid, liver damage and so on, we feel it important not to disregard the psychogenic factors. It must be fully realized that the clinical picture can be considerably influenced by the personality of the patient. Since fear is usually the primary affect in these alcoholic delirious states, it is well to keep the patient in a neutral environment, to shift the nursing personnel as little as possible and to reassure the patient constantly concerning his fears and hallucinations.

It should be emphasized that our patients with delirium tremens were seriously ill and formed a group of the most violent patients who were treated in the disturbed ward of this psychiatric hospital. The sole fact that they had delirium tremens, whether with complications or not, determined our choice of patients for this study. In six months prior to the use of this treatment there were ninety-two cases of alcoholic delirium, with sixteen deaths, a mortality rate of 16 per cent. During a subsequent period of the same duration, among the sixty-five patients treated by this new method there were but three deaths, making a mortality of 4.6 per cent.

To date we have confined our treatment to patients in the disturbed ward of the psychiatric department of Bellevue Hospital. We are expanding this study to include patients suffering from delirium tremens in other parts of the hospital. These results we shall subsequently report.

In treating alcoholic delirium we emphasize the following procedures:

1. Withdraw alcohol abruptly.
2. Give sedative medication judiciously, paraldehyde being preferred and morphine condemned.
3. Omit restraints unless absolutely necessary.
4. Give carbohydrate in large quantities.
5. Administer sodium chloride in an attempt both to combat dehydration and to restore the normal acid-base equilibrium of the body.
6. Provide a high calory, high vitamin diet.
7. Force fluids.
8. Do lumbar punctures for diagnostic purposes only.
9. Treat complicating or precipitating factors with specific therapy.
10. Give individual psychotherapy according to the needs of the patient.

The Organic Basis of Crime.—Psychiatry has shed some light on the causation of crime, but it is baffled by the intangibility of psychological processes. If one could put his finger upon a mental defect as upon a wart, or could measure a subnormal mentality with a clinical thermometer, the task of the psychiatrist would, at least, be simplified. At present the diagnosis of mental disease and the determination of mental defect remain somewhat fuzzy, and subject to personal equation. . . . The absence of norms for mental states is partially due to the abstract quality of psychological processes.—Hooton, Earnest Albert: Crime and the Man, Cambridge, Mass., Harvard University Press, 1939.

THE PROGNOSIS AND SUBSEQUENT DEVELOPMENTS IN ACUTE RHEUMATIC PERICARDITIS

EDWARD MASSIE, M.D.
ST. LOUIS
AND
SAMUEL A. LEVINE, M.D.
BOSTON

There is a dearth of information concerning the subsequent developments and final outcome of cases of acute rheumatic pericarditis. Although this condition is frequently seen and has often been studied during its acute phases, the difficulty of tracing and following the same persons for long periods after the immediate recovery has occurred probably accounts for the lack of careful observations concerning its ultimate outcome. It is not our purpose here to ascertain the incidence of acute rheumatic pericarditis but rather to study the immediate mortality and the future course of this disease. Numerous and varied contentions have been made concerning these points, but there are very few critical data on this subject.

Carter [1] has indicated that pericarditis occurs in from 6 to 25 per cent of cases of acute rheumatic infections. The great variation in the incidence according to different authors no doubt depends on the fact that the clinical diagnosis can easily be missed if the friction rub is not heard and that studies limited to postmortem data will show a high incidence of pericardial involvement. This is clearly borne out by the study of Bland and Jones,[2] who found that 35 per cent of 135 patients who died of rheumatic fever had a pericardial friction rub during their terminal illness. On the other hand, 55 per cent of those examined post mortem showed evidence of acute pericardial inflammation. As to prognosis, White [3] properly emphasized the fact that "the immediate prognosis in acute pericarditis is good as a rule in the nonpyogenic infections in spite of well marked symptoms and signs." On the other hand, Findlay, Macfarlane and Stevenson [4] in a study of rheumatic pericarditis in childhood found that both the immediate and the remote prognosis are serious. Numerous investigations have been carried out on the prognosis of rheumatic fever in general, but little attention has been paid to the role that pericarditis, per se, might play in these cases.

MATERIAL FOR THIS INVESTIGATION

In this study all the cases of definite acute rheumatic pericarditis seen at the Peter Bent Brigham Hospital during the years 1913-1937 and those seen in consultation by one of us were investigated. There were 106 of the former and twenty-nine of the latter, a total of 135 cases. A few of the hospital patients had had acute pericarditis in the Children's Hospital and were subsequently under our care. In the main, the diagnosis rested on the finding of a typical to and fro pericardial friction rub, the presence of pericardial effusion and other stigmas of rheumatic infection.

In this series there were eighty-six males and forty-nine females. The predominance of males has also been

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From the Medical Clinic of the Peter Bent Brigham Hospital.

1. Carter, E. P.: Diseases of the Pericardium, in Blumer, George: Bedside Diagnosis, Philadelphia, W. B. Saunders Company **2**: 534, 1928.
2. Bland, E. F., and Jones, T. D.: Fatal Rheumatic Fever, Arch. Int. Med. **61**: 161 (Feb.) 1938.
3. White, P. D.: Heart Disease, New York, Macmillan Company, 1937, p. 470.
4. Findlay, Leonard; Macfarlane, J. W., and Stevenson, Mary M.: Rheumatic Pericarditis in Childhood, Arch. Dis. Childhood **5**: 1 (Feb.) 1930.

found in previous reviews. The youngest patient was 3 years old and the oldest was 57. The average age of the entire group was 19.6 years. The distribution in the various decades is indicated in table 1. The greatest incidence was in the second decade, in which more than half the cases occurred. The number of patients under the age of 12 years is less than would be obtained in a more comprehensive study, since patients under the age of 12 are not ordinarily treated at the Peter Bent Brigham Hospital.

It is well known that rheumatic fever may manifest itself without the presence of typical polyarticular rheumatism and in fact without any pains in the limbs at all. The symptoms of this disease may be entirely or mainly confined to the heart. It is true, however, that when such a situation arises very close questioning may uncover the fact that there have been mild aches or pains in the limbs. Of our entire series of 135 cases the acute pericarditis was accompanied by definite arthritis in 110 instances, in eleven of which the symptoms consisted mainly of mild pains in the limbs. Very painful joints were uncommon. In the remaining twenty-five cases, pains in the muscles or joints did not occur. One of these cases presented typical chorea with the acute pericarditis. Of the other twenty-four patients

TABLE 1.—*Age and Sex Incidence*

Decade	Cases		Sex	
	Number	Per Cent	Males	Females
3- 9	15	11.1	10	5
10-19	76	56.3	49	27
20-29	23	17.0	15	8
30-39	14	10.4	10	4
40-49	5	3.7	2	3
50-57	2	1.5	0	2
Total	135	100.0	86	49

without either arthritis or chorea, seventeen had a past history of one or more attacks of rheumatic fever with or without residual valvular disease and the others had a history of frequent tonsillitis or a family history of rheumatic heart disease. To be sure, many of the patients who had arthritis with the acute pericarditis also had a past history of rheumatic infection. In fact sixty-nine patients, or 51 per cent of the entire series of 135, had such a past history. This included eight patients who had both rheumatic fever and chorea and four who had chorea alone.

IMMEDIATE MORTALITY

The immediate mortality of the entire group was 16.3 per cent. The duration of the acute illness in these fatal cases varied from one to eighteen weeks, with an average of five weeks. There was a slight indication that the disease was more serious in the younger patients, for the average age of the fatal group was 16.3 years, in contrast to an average age of 20.2 years for those who recovered. Apart from this factor of age there did not seem to be any differences between the fatal and the nonfatal cases. The occurrence of pericardial effusion, presence or absence of rheumatic pains, the sex distribution and the past history of rheumatic fever seemed to be the same in the two groups of cases. Six of the patients who died during the acute attack were examined post mortem, and they all showed evidence of acute involvement of the pericardium and myocardium.

SUBSEQUENT DEVELOPMENTS

The problem that interested us particularly in this study was the subsequent progress and developments in those patients who recovered from the acute rheumatic pericarditis. Many of these patients had their acute infection a long time before. Despite this, follow-up notes were obtained as to the present status or ultimate outcome in 104 of the 135 cases. It was impossible to trace the subsequent history of thirty-one patients. Twenty-two patients died of the acute infection. This group has already been discussed. An additional twenty-five patients died a considerable time after recovering from the acute pericarditis. The average duration of life of this fatal group after the onset of acute pericarditis was 6.7 years, the interval varying from six months to seventeen years. Twelve of these patients died of heart disease, five of pneumonia, two of incidental illnesses and six of unknown causes.

It was possible to ascertain the subsequent subjective or objective status in eighty-two instances some years after the primary infection. In seventy of these, data obtained on careful physical examination were available. Of twelve additional patients only the general health was known. The average time elapsed between the acute pericarditis and the final examination or follow-up note was a little over seven years, the interval varying from one to seventeen years. The most striking fact that was learned in following these cases was that, after the twenty-five fatalities were eliminated, fifty-two of the fifty-seven remaining patients were in satisfactory condition and able to carry on essentially normal activities.

Even more impressive than the general feeling of good health that was present in most of the living patients was the frequency of only minimal evidence of organic heart disease on physical examination. Table 2 indicates the diagnoses of the valvular condition at the time of the last follow-up examination. The term potential heart disease is used only for those cases in which there were no symptoms of cardiac disability and either no murmurs whatever or only a faint grade 1 systolic murmur.[5] The seventy cases were divided into two groups: those with and those without a history of rheumatic fever or rheumatic heart disease previous to the acute pericarditis. There were thirty of the former and forty of the latter. It is interesting that twenty-five of these seventy patients were still regarded as having potential heart disease many years after the acute pericarditis; in fact fifteen of these twenty-five patients had no murmurs whatever and showed no signs or symptoms of heart disease. In ten additional patients there was a systolic murmur sufficiently loud to be classified as mitral insufficiency. Practically all of these patients were symptom free. The remaining thirty-five patients had major lesions of the mitral or aortic valves or both. Even most of these had a good cardiac reserve and were carrying on satisfactorily. Apart from the incidence of benign or insignificant valvular lesions in the group as a whole, it is noteworthy that a large number of patients without a previous history of rheumatic infection proved to have only potential heart disease. Whereas only five of the thirty cases with a previous history of rheumatic infection subsequently showed minimal involvement of the heart (potential heart disease or mitral insufficiency), thirty of the forty cases without such previous history fell into this group. It follows that even after a severe bout of rheumatic peri-

5. Freeman, A. R., and Levine, S. A.: The Clinical Significance of the Systolic Murmur, Ann. Int. Med. **6**: 1371 (May) 1933.

carditis recovery can frequently be so complete that years later there may be no signs or symptoms of heart disease. This was found to be particularly true if there was no previous rheumatic infection.

ROLE OF ACUTE PERICARDITIS PER SE

An attempt was made in this study to investigate the role that percarditis per se might play in the subsequent progress of those patients who recovered from the acute infection. For this purpose the conditions that were present in the heart before the acute pericarditis, those immediately after the acute infection and those detected years later were compared whenever such data were available.

TABLE 2.—*Valvular Lesion on Follow-Up Examination*

Diagnosis	Cases With History of R.F.* or R.H.D.* Prior to the Acute Pericarditis		Cases Without History of R.F. or R.H.D. Prior to the Acute Pericarditis		Both Groups	
	Number	Per Cent	Number	Per Cent	Number	Per Cent
Potential heart disease	1	3.3	24	60.0	25	35.7
Mitral insufficiency	4	13.3	6	15.0	10	14.3
Mitral stenosis with or without mitral insufficiency	9	30.0	3	7.5	12	17.1
Aortic insufficiency	1	3.3	3	7.5	4	5.7
Aortic insufficiency, mitral insufficiency	2	6.7	0	0	2	2.9
Aortic insufficiency, mitral insufficiency, mitral stenosis	6	20.0	3	7.5	9	12.9
Aortic insufficiency, aortic stenosis, mitral insufficiency, mitral stenosis	7	23.4	1	2.5	8	11.4
Total cases	30	100.0	40	100.0	70	100.0

* R.F., rheumatic fever; R.H.D., rheumatic heart disease.

There were seventy cases in which the valvular diagnoses made immediately after the subsidence of the acute pericarditis could be compared with the observations made in the follow-up examination performed years later. The anatomic diagnoses in these cases are indicated in table 3. It is very significant that twenty-two patients who were regarded as having potential heart disease after the acute pericarditis showed no more evidence of cardiac involvement in the follow-up study. In fact in three additional cases in which the systolic murmur was loud enough to merit the diagnosis of mitral insufficiency so little was heard in the heart in the follow-up examination that the diagnosis was changed to potential heart disease. There were also eleven cases of mitral insufficiency in which there was no change in subsequent years. There were twenty-two other instances presenting various types of valvular disease in which the condition remained stationary. It is interesting that of the twelve patients who had progressive lesions nine had recurrent rheumatic fever during the intervening years after the attack of pericarditis. There were therefore only three patients who showed further involvement of the valves of the heart that might be regarded as a natural progression of the original injury, without any obvious new infection occurring. In recapitulation it is evident that fifty-eight of the seventy cases did not show any progression (three of these, in fact, retrogressed) while evidence developed in twelve of new valvular involvement or stenosis of a valve previously insufficient.

The effect of the acute infection was further studied in a small group of cases in which the anatomic diagnosis was available before and directly after the pericarditis. There were nine such cases, all of which presented clearcut mitral stenosis and insufficiency. Five of these patients had aortic insufficiency in addition. Three of these nine patients had further involvement of the valves on follow-up study but all three had a subsequent attack of rheumatic fever. In only one instance was there evidence that a new lesion of the valve (aortic insufficiency) developed during the attack of acute pericarditis.

X-RAY EXAMINATIONS

In none of the patients who were examined years after the acute pericarditis was there any clinical evidence of constrictive pericarditis. This was rather striking, notwithstanding the fact that the eight patients who were examined post mortem (six who died during the acute attack and two who died in subsequent years) all showed either fibrinous or fibrous pericarditis. X-ray examination of the heart was made in six cases from one to sixteen years after the acute pericarditis. Careful fluoroscopic study and roentgenkymography were carried out. In none was there any calcification or other evidence of pericardial constriction. The x-ray appearances in the cases that presented valvular disease were those customarily seen with such lesions and in the two that presented no heart disease the roentgenograms were entirely normal. These results are in accord with previous observations [6] that rheumatic pericarditis is rarely if ever a cause of constrictive pericarditis.

ELECTROCARDIOGRAPHIC APPEARANCES

No attempt was made here to investigate the changes in the ventricular complex which accompany acute pericarditis. This has recently been carefully analyzed by Bellet and McMillan.[7] We were interested, however, in tracing what happens to the PR interval, which is so commonly involved. Of ninety instances in which electrocardiograms were taken in the acute attack, eighteen showed delay in the PR interval. Of thirty-one patients reexamined in this follow-up study, nine had delayed auriculoventricular conduction. Four of these nine had also had essentially the same degree of delayed conduction during the acute attack. Two of these four, how-

TABLE 3.—*Comparison of Valvular Diagnoses Made Immediately After Acute Attack and on Follow-Up*

Number of Cases*	Diagnosis Immediately After Attack	Diagnosis on Follow-Up
22	Potential heart disease	Potential heart disease
3	Mitral insufficiency	Potential heart disease
11	Mitral insufficiency	Mitral insufficiency
4 (2)	Mitral insufficiency	Mitral insufficiency, mitral stenosis
1 (1)	Mitral insufficiency	Mitral insufficiency, mitral stenosis, aortic insufficiency
1 (1)	Mitral insufficiency	Mitral insufficiency, mitral stenosis, aortic insufficiency, aortic stenosis
7	Mitral insufficiency, mitral stenosis	Mitral insufficiency, mitral stenosis
1 (1)	Mitral insufficiency, mitral stenosis	Mitral insufficiency, mitral stenosis, aortic insufficiency, aortic stenosis
4	Aortic insufficiency	Aortic insufficiency
2	Aortic insufficiency, mitral insufficiency	Aortic insufficiency, mitral insufficiency
2 (2)	Aortic insufficiency, mitral insufficiency	Aortic insufficiency, mitral insufficiency, mitral stenosis
6	Aortic insufficiency, mitral insufficiency, mitral stenosis	Aortic insufficiency, mitral insufficiency, mitral stenosis
3 (2)	Aortic insufficiency, mitral insufficiency, mitral stenosis	Aortic insufficiency, aortic stenosis, mitral insufficiency, mitral stenosis
3	Aortic insufficiency, aortic stenosis, mitral insufficiency, mitral stenosis	Aortic insufficiency, aortic stenosis, mitral insufficiency, mitral stenosis

* Number in parentheses indicates number of cases in which one or more attacks of rheumatic fever occurred in interval between the acute pericarditis and follow-up examination when progression of valvular lesion occurred.

6. White: Heart Disease, p. 237.
7. Bellet, Samuel, and McMillan, T. M.: Electrocardiographic Patterns in Acute Pericarditis, Arch. Int. Med. **61**: 381 (March) 1938.

ever, were again suffering from acute rheumatic carditis, whereas the other two were symptomatically well. The remaining five patients having delayed conduction on follow-up examination (three of whom were again suffering from acute rheumatic carditis) had had a normal PR interval during the original pericarditis. It must be said, however, that electrocardiograms were usually taken only on one occasion during the acute pericarditis and that some of those who subsequently showed an increased PR interval might have had a similar delay during the early infection if further electrocardiograms had been taken. It follows that, although in a great majority of instances the heart block which occurs during acute pericarditis disappears, occasionally it may persist indefinitely.

The relation of auricular fibrillation to acute pericarditis was of some interest. There were four instances in which this irregularity occurred transiently with the acute attack. There were two additional cases of transient auricular flutter. Three of the aforementioned patients had gross organic heart disease and the other three did not. An additional patient with valvular disorders had transient nodal rhythm. It is significant that there were five additional patients in whom auricular fibrillation did not disappear, and they all had mitral stenosis with or without other lesions of the valve. It was known that at least one of these had auricular fibrillation before the attack of pericarditis. We are of the impression that these irregularities are apt to be transient if they are unassociated with significant valvular disease and are likely to be permanent if a fair degree of mitral stenosis is present. Furthermore, we also suspect that acute pericarditis is uncommon in cases of long-standing mitral stenosis and auricular fibrillation.

FREQUENCY OF INVOLVEMENT OF THE AORTIC VALVE

There are some general considerations that seem to be worth commenting on as a result of this review. It has seemed to be more than accidental that as many as one half of the patients who had valvular disease showed evidence of aortic involvement. Twenty-three of the forty-five patients with valvular disease had aortic lesions (table 2). To be sure, most of these had mitral involvement as well. The frequency of aortic stenosis and insufficiency appears to be greater in this group of patients who suffered an attack of acute pericarditis than occurs in the average group of rheumatic patients. A possible explanation of this was offered some years ago [8] when it was suggested that the infection spreads from pericardium to endocardium by extension. Later [9] it was pointed out that the proximity of the aortic valve to the pericardium in contrast to the greater distance from the mitral valve to the pericardium might account for the frequency of aortic involvement if the infection extended by contiguity. Recently Gross and Silverman [10] published some pathologic studies that lend further support to this view.

PREDOMINANT IMPORTANCE OF INJURY TO THE VALVE IN RHEUMATIC HEART DISEASE

This study has indirectly thrown considerable light on the importance of the valvular lesion in rheumatic infections. In recent years much emphasis has been placed on the importance of the myocardium in heart disease in general and particularly in the production of heart failure. Although the state of the myocardium no doubt is of primary importance in nonvalvular heart disease, there is much evidence to make one believe that it plays a minor role in rheumatic heart disease. If one omits those cases in which death occurs in the acute rheumatic state when the heart as well as other important organs of the body are overwhelmed by the acute toxic process, the outcome and subsequent health of the patient will depend on whether the valves are injured or not. Whatever the injury to the heart muscle that takes place during the acute stage of the disease may be, the myocardium apparently undergoes complete recovery. This fact is demonstrated clinically by the good health that is maintained for many years by those who recovered from the most violent attack of pericarditis and myocarditis. It is also attested by the lack of significant pathologic changes in the myocardium of patients with chronic rheumatic valvular disease or of those who had a previous rheumatic infection and died many years later. If the state of the myocardium were important in the development of heart failure in those who previously suffered from rheumatic infection apart from valvular disease, one would have to expect to find a significant number of rheumatic patients without valvular disease suffering from congestive heart failure. No such group of cases is encountered clinically.

We are of the opinion that, after a bout of rheumatism, if the valves are spared recovery is essentially complete and the prognosis is good, and that it is only because of valvular damage that subsequent cardiac disability results. The injury to the valves is important not only because of the mechanical embarrassment that stenosis or regurgitation may have on the chambers of the heart but also because of the liability of bacterial endocarditis developing on any injured valve. We believe that if one could produce a purely mechanical stenosis or even regurgitation of one of the valves, a process would be established that would progress with greater or lesser rapidity leading to one or another of the disasters of heart disease, such as dilatation of the chambers, auricular fibrillation, mural thrombosis and embolism, congestive heart failure or bacterial endocarditis. We also believe that this change could occur even if the heart muscle were originally normal.

SUMMARY

1. A study was made of 135 patients (eighty-six males and forty-nine females) with acute rheumatic pericarditis, particular reference being made to the ultimate prognosis. The average age was 19.6 years (from 3 to 57 years).

2. During the acute attack, 110 of the 135 patients had an accompanying arthritis, one had chorea and in the others the involvement of the heart was the main evidence of rheumatic activity.

3. Twenty-two patients died of the acute infection, an immediate mortality of 16.3 per cent.

4. In eighty-two of the remaining 113 cases follow-up data were available after an average interval of seven years (from one to seventeen years).

5. Twenty-five patients died after recovery from the initial infection at an average interval of 6.7 years (from six months to seventeen years).

6. Fifty-two of the eighty-two patients on whom follow-up notes were available were found to be in satisfactory health and able to carry on normal activity.

7. It was very striking that 36 per cent of those examined on follow-up had no evidence of organic heart

8. Levine, S. A.: Diseases of the Pericardium, Nelson Loose-Leaf Medicine, New York, Thomas Nelson & Sons **4**: 181, 1923.
9. Levine, S. A.: Clinical Heart Disease, Philadelphia, W. B. Saunders Company, 1936, p. 81.
10. Gross, Louis, and Silverman, Gertrude: The Aortic Commissural Lesion in Rheumatic Fever, Am. J. Path. **13**: 389 (May) 1937.

disease, and an additional 14 per cent had only mitral insufficiency. In the remaining cases aortic valvular involvement seemed to be more common than one would expect in an average group of rheumatic patients. Even after a desperately severe attack of acute pericarditis recovery was often complete, so that many cases showed subsequently neither subjective nor objective evidence of heart disease.

8. A comparison of the examinations made before, immediately after and many years subsequent to the attack of acute pericarditis showed that new involvement of the valves was uncommon unless another attack of rheumatic fever intervened.

9. Delayed auriculoventricular conduction on rare occasions persisted many years after an attack of acute pericarditis. Auricular fibrillation or flutter occasionally occurred as a transient phenomenon, and when the arrhythmia was persistent it was always associated with mitral stenosis.

10. X-ray or clinical evidence of constrictive pericarditis did not occur in any instance.

11. This study emphasizes the great importance of injury to the valves of the heart in the subsequent prognosis of acute rheumatic infections and the minor role that the heart muscle or pericardium plays after recovery occurs from the acute infection.

INHALATION THERAPY OF BRONCHIAL ASTHMA

JAMES B. GRAESER, M.D.

OAKLAND, CALIF.

The possibility of obtaining relief of asthmatic symptoms by the direct application of a solution of epinephrine to the bronchial mucosa was reported by Ephraim [1] as early as 1910. Through the bronchoscope he first observed blanching of the mucous membrane after subcutaneous administration of epinephrine. Subsequently, epinephrine solution was sprayed directly into the bronchi through the bronchoscope with definite relief of asthmatic symptoms. In a later communication Ephraim [2] repeated these observations and commented on the beneficial effect of procaine hydrochloride alone, although he said that greater benefit resulted from the epinephrine. Thereafter, other authors reported the efficacy of the inhalation of epinephrine solutions for the relief of asthmatic symptoms. The earler of these were Krause,[3] Segel [4] and Zuelzer.[5]

In later years a number of reports have been made concerning this procedure, such as those of Grunwald,[6] Sachse,[7] Weiss and Magassy,[8] Camps,[9] Knipping, Lewis and Moncrieff,[10] Poras [11] and Lageder.[12] In Europe a number of epinephrine solutions have been marketed under patented names and various atomizers devised for use with them. Combinations of epinephrine with local anesthetics and other endocrine and drug preparations have been recommended by different authors. "Glycerinan," a solution of epinephrine in salt solution and glycerin, was used by Sachse,[7] Lageder [12] and others. "Tonolysin" was reported on by Weiss and Magassy [8] and "apneugene" by Camps.[9] "Bronchovydrin," a combination of pituitary extract, epinephrine and papaverine, was favorably reported on by Poras.[11] Inhalation periods varying from five to twenty minutes were apparently necessary with all these preparations, suggesting that the actual epinephrine content of the solution was low, probably in the 1 : 1,000 range. Both rubber bulb and motor-driven atomizers were used.

Lageder [12] was the only author who mentioned the use of a more concentrated epinephrine solution. In his studies on the effect of the inhalation procedure on lung ventilation he cited the occurrence of systemic effects following inhalation of a 1 : 200 solution of epinephrine. No comment was made, however, with regard to the use of the stronger solution in actual therapy.

The first report on the therapeutic value of inhalation of a more concentrated epinephrine solution (1 : 100) was made in 1935 by me.[13] Other reports have been made by Matzger,[14] Nielsen [15] and again by me.[16]

Subsequent observations have been made on patients using the 1 : 100 epinephrine solution for more extended periods. An attempt has also been made to work out more thoroughly the question of the most suitable dilution of epinephrine. Furthermore, certain comparisons have been made between the use of a 1 : 100 solution of epinephrine and the use of other drugs. These studies are the subject of the present report.

METHOD

The hand atomizer with the rubber bulb and the general technic previously described [17] were used. Atomizers of more than average efficiency from the point of view of volume and fineness of spray were selected. The patients chosen were all chronic sufferers having persistent symptoms. Before beginning the experiment all had been using the inhalation procedure for from several weeks to several months with varying degrees of success. Dilutions of the 1 : 100 epinephrine solution [18] were made with physiologic solution of sodium chloride. Several dilutions were given to each patient at one time, labeled in code, always including the 1 : 100 dilution. In some instances two atomizers were given to the patient so that immediate comparisons could be carried out without changing the solution in the atomizer. The dilutions given were changed frequently under different code numbers until the observations

1. Ephraim, A.: Ueber endobronchiale Therapie, besonders bei der chronischen Bronchitis und beim bronchialen Asthma, Verhandl. d. deutsch. Kong. f. inn. Med. **27**: 786 (April) 1910; Ueber endobronchiale Therapie, Berl. klin. Wchnschr. **47**: 1317 (July) 1910.

2. Ephraim, A.: Ueber die Wirkung des Adrenalin beim Asthma und bei der Chronische Bronchitis, Deutsche med. Wchnschr. **38**: 1453 (Aug.) 1912.

3. Krause, Robert A., in discussion on Ephraim.[1]

4. Segel, J.: Ein Beitrag zur Therapie des Asthma Bronchiale, Zentralbl. f. inn. Med. **31**: 569 (June) 1910.

5. Zuelzer, G.: Die Behandlung akuter Katarrhe der oberen Luftwege durch Inhalation von Nebennierenpräparaten, Berl. klin. Wchnschr. **48**: 285, 1911.

6. Grunwald, L.: Ein einfaches Verfahren der tracheobronchialen Injektion zur Asthmabehandlung, München. med. Wchnschr. **60**: 1377 1913.

7. Sachse: Lokale Behandlung und parenterale Medikamentenzufuhr durch Inhalation von Glycerinan mit dem Electro-Atmos, Med. Klin. **22**: 777 (May) 1926.

8. Weiss, Stefan, and von Magassy: Beitrag zur endotrachealen Anwendung und zur Wirkungsweise des Adrenalins, Ztschr. f. d. ges. exper. Med. **58**: 608 (Sept.) 1927.

9. Camps, P. W. L.: Inhalation Treatment of Asthma, Guy's Hosp. Rep. **79**: 496 (Oct.) 1929.

10. Knipping, H. W.; Lewis, William, and Moncrieff, Alan: Ueber die Dyspnoe, Beitr. z. Klin. d. Tuberk. **79**: 1, 1931.

11. Poras, J.: Asthma-bronchiale-Behandlung, Schweiz. med. Wchnschr. **62**: 283 (March 19) 1932.

12. Lageder, Karl: Untersuchungen über den Einfluss inhalierten Adrenalins auf die Lungenventilation beim Asthma bronchiale und über dessen Allgemeinwirkung, Beitr. z. Klin. d. Tuberk. **83**: 605, 1933.

13. Graeser, J. B., and Rowe, A. H.: Inhalation of Epinephrine for the Relief of Asthmatic Symptoms, J. Allergy **6**: 415 (July) 1935.

14. Matzger, Edward: Epinephrine by Inhalation for Relief of Attacks of Bronchial Asthma, California & West. Med. **43**: 226 (Sept.) 1935.

15. Nielsen, Niels A.: Treatment of Asthmatic Attacks by Inhalation of Adrenalin, Lancet **2**: 848 (Oct. 10) 1936.

16. Graeser, James B., and Rowe, A. H.: Inhalation of Epinephrine Hydrochloride for Relief of Asthma in Children, Am. J. Dis. Child. **52**: 92 (July) 1936.

17. Graeser, footnotes 13 and 16.

18. All epinephrine solutions used in this study were furnished by Parke, Davis & Co.

reported by the patients assumed some degree of consistency. The extreme variation in the reports of results of the use of the same dilution on different occasions necessitated repeated trials over periods of several months. Salt solution alone was given in a number of instances.

RESULTS

The accompanying table summarizes the results of these experiments. The degrees of relief obtained were roughly graded as "excellent," "moderate" and "slight," and as recorded in the table represent the average of the reports submitted. "Excellent" results were not constantly so, but the term as used signifies that in attacks of average severity excellent results were obtained. Not infrequently during severe symptoms only "moderate" or "slight" relief would be obtained. "Slight" relief likewise signifies an average result. During very mild symptoms "excellent" relief might be obtained with the more dilute solution. Several patients reported good relief on some occasions from salt solution alone. Confusing evidence of this type is to be expected in evaluating a therapeutic procedure on

Degrees of Symptomatic Relief of Asthma Following Inhalation of Dilutions of Epinephrine, Ephedrine and Neosynephrin

Patient	1:100	1:200	1:300	1:400	1:500	Ephedrine, 10%	Neosynephrin, 10%
1. C. H.	Excellent	Slight	None	None	.....	None	None
2. V. I.	Excellent	Excellent	Slight	None	.....	None	None
3. B. E.	Excellent	Moderate	Slight	Slight	Slight	.....	.....
4. H. A.	Excellent	Moderate	Slight	None	None	None	None
5. H. E.	Excellent	Moderate	None	None	.....	None	.....
6. V. K.	Excellent	Excellent	Excellent	Slight	None	None	.....
7. M. A.	Excellent	Slight	Slight	Slight	.....	.....	.....
8. R. I.	Excellent	Excellent	Slight	Slight	.....	None	.....
9. L. O.	Excellent	Moderate	Moderate	Slight	Slight	.....	.....
10. M. A.	Excellent	Moderate	Slight	Slight	Slight	.....	.....
11. S. I.	Excellent	Excellent	Slight	Slight	None	.....	.....
12. B. O.	Excellent	Moderate	Moderate	None	None	.....	.....
13. M. E.	Excellent	Excellent	Excellent	Moderate	None	.....	.....
14. P. I.	Excellent	Moderate	Slight	None	.....	None	.....
15. S. T.	Excellent	Moderate	Moderate	Slight	.....	.....	.....
16. D. A.	Moderate	Moderate	Slight	Slight	Slight	.....	None
17. S. C.	Excellent	Excellent	Moderate	Moderate	None	.....	.....
18. H. A.	Excellent	Excellent	Moderate	Slight	None	.....	None

a subjective basis in the treatment of a disease as variable as asthma. Some patients not included in the table submitted results so consistently inconsistent that they were discarded. The results summarized in the table, therefore, are averages of repeated trials of the several dilutions of epinephrine.

From the table it is apparent that the 1 : 100 dilution of epinephrine proved to be the most effective of the solutions used under the conditions of the experiment. The patients did not always inhale the same number of breaths of vapor-laden air. The average time of inhalation, intermittent as it would necessarily be with the hand apparatus, varied between one and four minutes. Continuous inhalation with a motor driven apparatus, with inhalation through a mask, would probably have given the same results more consistently in less average time. With the motor-driven apparatus systemic effects from epinephrine are frequently obtained with continuous inhalation of the 1 : 100 dilution for two minutes, but such effects rarely occur when the hand apparatus is used for this length of time.

A 2 per cent solution, or a 1 : 50 dilution, of epinephrine was used by twelve different patients. With the same number of inhalations there were more frequent reports of systemic symptoms, such as headache, tremor and palpitation, without appreciably more relief of the actual asthmatic symptoms. Two of the twelve patients felt that the stronger solution was decidedly superior, but they likewise experienced systemic symptoms, though mild, much more often, whereas these rarely occurred with the 1 : 100 dilution. As a result of these observations it was felt that the stronger solution was not sufficiently advantageous for recommendation for general use, for in the mild or moderately severe paroxysms of asthma, for which inhalation of an epinephrine solution is the most effective, the 1 : 100 dilution was just as beneficial as the 1 : 50 dilution. Another consideration which of necessity must enter into this conclusion is the added cost of the stronger solution. Furthermore, when the 1 : 100 solution fails to relieve the attacks after several trials it is advisable to resort to hypodermic administration to obtain relaxation of the bronchi if the patient still responds to epinephrine. After relief is obtained the inhalation procedure often serves to abort subsequent severe paroxysms.

Epinephrine and Solution of Posterior Pituitary.—One of the preparations previously mentioned [11] contained these two substances. A solution of equal parts of 1 : 100 epinephrine solution and 1 : 1,000 solution of posterior pituitary was prepared and used in twelve cases. The results obtained were comparable to those recorded in the table from the use of a 1 : 200 dilution of epinephrine. No appreciable enhancement of effects occurred from the addition of the pituitary solution.

Ephedrine Sulfate.—A 10 per cent dilution in physiologic solution of sodium chloride was prepared and used under the conditions of this experiment. No benefit resulted even with more prolonged periods of inhalation. The patients complained of a bitter taste and dryness of the nasopharynx but not of the nervousness or palpitation.

Neosynephrin.—A 5 per cent solution was of no benefit in five instances.

Cocaine.—A 1 per cent cocaine solution was tried by ten patients. Two of these reported benefit comparable to that obtained with the 1 : 100 epinephrine solution. Six reported moderate benefit and four none. The relief was not as marked as with the epinephrine solution. A comparison was also made by six patients with a patent preparation containing a 1 per cent cocaine mixture with nitrites. The results were about the same as with the pure cocaine solution; that is, under the conditions of the experiment the preparation was definitely less efficient than the epinephrine solution.

Extended observations were not made with the preparations other than epinephrine. They were used simply to determine the possibility of obtaining relief of asthma by an entirely different type of drug.

COMMENT

To attain either a local effect on the mucous membrane or a general therapeutic effect from inhalation of drugs one must attain a minimal effective concentration on the membrane. This is dependent on at least three factors, namely the absorptive power of the bronchial mucous membrane, the density of vapor in the inhaled atmosphere and the actual amount of vapor deposited on the mucosa. Heubner and his co-workers [19] have conducted many animal experiments on inhalation of dye solutions under varying experimental conditions. By this means they were able to demonstrate widespread dissemination of dye throughout various organs of the body. Within the bronchial tree the largest concentra-

19. Heubner, W.: Ueber Inhalation zerstander Flüssigkeiten, Ztschr. f. d. ges. exper. Med. **10**: 269, 1920.

tion of dye, as shown by intensity of color, occurred at the carina and bifurcations of the larger and smaller bronchi. Penetration of the dye in the peribronchial mucosa was also noted. Very little is known, however, of the actual absorptive power of the different portions of the respiratory tract. It is generally assumed, though not definitely proved, that the lower portions have the higher absorptive power, but there is considerable divergence of opinion as to how deep into the bronchial tree vapor droplets are actually carried. This was discussed in detail by Heubner.[19] He demonstrated a definite relationship between the depth of respiration and the transport of droplets and expressed the opinion that vaporized liquid droplets can enter the field of the smaller bronchi if they are of suitable size and the vapor is of sufficient density. Clear demonstration of this penetration is difficult.

The density of vapor is dependent on the apparatus used for vaporization. A spray of high density is necessary for obtaining maximum results in inhalation therapy. Very few of the atomizers available for use with the epinephrine solution are efficient in this aspect. Furthermore, the droplets constituting the vapor must be of extreme fineness, for the reason that droplets below a certain size no longer respond to the force of gravity and so tend to follow freely the movements of the air currents in the bronchial tree.

Of importance also is the concentration of the drug solution vaporized. It must be much higher than that usually used for other routes of administration. Heubner stressed the fact that one need not fear the effect of inhalation of a concentrated solution of a drug if the vapor is of suitable fineness for few of the droplets inhaled actually to come in contact with the mucous membranes. Those actually adhering to the cell membrane are quickly diluted by tissue fluid and glandular secretion and spread widely, so that the final concentration of the drug on the mucous membrane is not at all comparable to the concentration of the solution vaporized.

The amount of the drug actually deposited depends on several factors. With deep inhalation a greater amount of the vapor will reach the smaller bronchi. Here more droplets are likely to be deposited, because of the more favorable relationship between the extent of the exposed mucous surface and the volume of vapor in the lumen of the bronchi.

It is probable also that the condition of the mucous membrane, that is, whether congested with blood, covered with mucus or atrophic, has a role in determining adherence of the droplets to the mucous membrane at the edge of the air current. Likewise the vehicle carrying the drug, i. e. salt solution, glycerin or oil, will vary its adhering qualities. Little is known concerning the latter factors.

It is obvious from this discussion that there is a great deal more to be learned concerning inhalation therapy. Continued experience with the inhalation of 1 : 100 epinephrine has demonstrated that the procedure is a valuable addition to the symptomatic therapy of asthma. The greatest benefit occurs when the symptoms are mild or moderately severe. During severe paroxysms its usefulness is limited because of the difficulty, as discussed, of obtaining penetration of the vapor deep into the bronchial tree. Failure of the procedure in many instances, however, is due to an inefficient atomizer and also to its incorrect use. Simple as the procedure is, many patients contrive to manipulate the instrument so awkwardly that very little of the vapor is actually inhaled. Too frequently the apparatus is prescribed but the patient is not instructed in its use. With small children whose cooperation is difficult to secure, to obtain some motor-driven mask apparatus, as previously described,[16] is necessary for maximum results.

In fully evaluating a procedure of this type one must keep in mind the possibility of deleterious effects from its continuous use. Such harmful reactions could be (1) increased frequency and severity of attacks resulting from irritation of the bronchial tract and (2) harmful general effects.

1. *Local Effects.*—Of a series of 162 patients using the inhalation procedure, two have been observed who became gradually but progressively worse and ultimately died. One of these patients is of particular interest, for he used the inhalation of epinephrine from three to twelve times daily from March 1935 until his death in November 1936. Both the hand atomizer and motor-driven pump were used. Attention was first called to the patient by the local pharmacist, who inquired concerning the advisability of furnishing him with such large quantities of the solution. Later the patient's dentist called attention to a rapidly developing erosion of the dentin of his teeth, which appeared about six months after he began the use of the spray and rapidly progressed. Unfortunately the patient had asthma most of the time, and, though no medication gave complete relief, the inhaled epinephrine was as effective as hypodermically administered epinephrine and much handier to use. Examination of the patient's lungs after death revealed nothing suggesting any harmful effects of the locally applied epinephrine. The other patient used inhalation much less often but frequently, nevertheless, for twenty-five months. The lungs after death gave appearances typical of asthma. Since progression of the disease in this manner has frequently been observed independent of the use of any particular drug or system of treatment, it would be incorrect to attribute the course of events entirely to the use of epinephrine.

It is not felt that the course of the disease is fundamentally altered by the use of inhaled epinephrine. Certainly many patients are made more comfortable because of the ease of obtaining relief by this means, but the asthma continues. However, no case has been observed in which it could be definitely proved that inhalation of epinephrine increased the severity of the asthma.

Some patients complain of tracheal and bronchial irritation and dryness of the throat from too frequent use. Patients vary extremely in tolerance in this regard. Those requiring inhalation frequently enough to cause uncomfortable tracheal irritation should at intervals resort to other forms of medication or to epinephrine hypodermically administered.

Increased cough is noted not infrequently immediately after inhalation. In most instances mucus is raised and the patient relieved. Similar coughing and expectoration of mucus may likewise occur after the hypodermic administration of epinephrine. The most probable explanation of this symptom is that the epinephrine (either inhaled or injected) causes relaxation of bronchial spasm or shrinkage of bronchial mucosa, which releases mucous plugs for expectoration. Inhaled smoke from the burning of stramonium preparations almost invariably causes paroxysms of coughing, usually with expectoration of more mucus than is expectorated after the use of the epinephrine spray. Several patients have been seen who for this reason still prefer stramonium preparations.

Only one patient has been seen who could not use the spray because of paroxysms of coughing resulting from tracheal and bronchial irritation.

2. *General Effects.*—As has been previously mentioned, there is a general absence of systemic symptoms such as tremor, headache and palpitation, which not uncommonly follow hypodermic administration of epinephrine. This is not invariable, however, and several patients have discontinued inhaling the 1:100 epinephrine because of severe headache. In both instances, however, a 1:200 dilution was used with moderate relief of asthma and without headache.

After observing for several years the use of this procedure and receiving queries regarding failures, I have noted no permanently harmful effects from the inhalation of the 1:100 epinephrine. One must keep in mind the possibility that continued use may not be without harm, but at present this has not become apparent from purely clinical observation.

CONCLUSION

Under average conditions the 1:100 dilution of epinephrine is the most practical for the inhalation therapy of bronchial asthma. It is definitely more efficient than the more dilute solution. In some instances a 1:50 dilution is more effective, and a 1:200 or lower dilution may be more suitable. Relief of asthmatic symptoms can also be obtained with a 1 per cent solution of cocaine, but no relief resulted from inhalation of 10 per cent ephedrine solution or a 5 per cent neosynephrin solution.

411 Thirtieth Street.

OBSCURE LOW GRADE CHRONIC INFECTIONS OF THE ETHMOID SINUSES

USE OF THE PROETZ DISPLACEMENT SUCTION FOR DIAGNOSIS

GEORGE E. SHAMBAUGH JR., M.D.

CHICAGO

The diagnosis of chronic infection of the ethmoid sinuses is one of the difficult diagnostic problems in rhinology. It is particularly difficult in those low grade chronic infections of the ethmoid sinuses in which the nasal passages appear normal on one or more examinations and in which any symptoms pointing directly to the sinuses are so slight as to be almost nonexistent and yet in which there is sufficient systemic absorption from the ethmoid infection to cause very definite systemic symptoms. It is these cases of obscure low grade infection to which I wish to call attention because they are so frequently overlooked.

Until a few years ago the diagnosis of chronic suppuration of the ethmoid sinuses depended on the examiner seeing pus coming from the middle or superior meatus after the maxillary, frontal or sphenoid sinus had been excluded as the source of the pus. A moment's reflection on how many chronic infections of the maxillary sinus would be missed if the rhinologist could neither transilluminate, take roentgenograms nor irrigate for diagnosis but had to rely solely on observing pus coming from the ostium will suggest that many chronic ethmoid infections were probably overlooked when the physician relied solely on seeing pus coming from the ostium. The x-rays occasionally came to his aid, but more often than not the x-ray examination of the ethmoids is indefinite, so that while it is valuable and fairly reliable in the diagnosis of chronic infections of the antrum and the frontal and sphenoid sinuses it has not been of much help for the ethmoid sinuses. To be sure, there were a few rhinologists who believed that low grade chronic ethmoid infection was a common and generally overlooked condition. These rhinologists diagnosed and operated on many ethmoids that others had diagnosed as normal, basing their opinion more on the symptoms than on any positive clinical manifestations. Inevitably many normal ethmoids were opened, since the symptoms on which the diagnosis was made were usually very vague and indefinite. Nevertheless some patients whom the rest of us had passed up as normal because we could find no pathologic condition in the nose were undoubtedly benefited by having their ethmoids opened and undoubtedly had a low grade ethmoid infection.

Twelve years ago Dr. Arthur Proetz introduced the displacement principle of diagnosis and treatment, and at once the diagnosis of low grade ethmoid infection was placed on an entirely new plane of accuracy. With this the whole conception of the frequency of chronic suppuration of the ethmoid sinuses is changing so that now I believe that the ethmoid is the most frequent sinus involved in acute and in chronic infections.

In his original work Proetz stressed the use of iodized oil introduced by displacement suction for the diagnosis of infections of the ethmoid sinuses. I have used iodized oil comparatively little, partly because of the added cost to the patient of additional roentgenograms and partly because I have not been convinced of the reliability of failure to fill or of delayed emptying time for the diagnosis of infection. In my experience the value of the Proetz method has been in the promotion of drainage from infected ethmoid cells; in other words, if I can get pus from the ethmoid sinus I have made the diagnosis.

The procedure that I use is briefly as follows: The symptoms, of which I shall speak further in greater detail, suggest a possible low grade chronic ethmoid infection in spite of normal appearing nasal passages on posterior as well as anterior rhinoscopy on one or more occasions. A roentgenogram is taken to rule out infection of the maxillary, frontal or sphenoid sinuses, and if any of these appear infected they are irrigated. The nasal passages, vestibule and especially the nasopharynx are then carefully cleansed of any adherent secretions. With the patient's head hyperextended in the Proetz position, the nasal passages are filled with 0.25 per cent ephedrine in physiologic solution of sodium chloride. Alternate suction and release of suction is applied from four to six times in each nostril, and if frank mucopus is obtained or is blown out into the towel when the patient sits up the diagnosis of ethmoid suppuration is made. The importance of removing any mucopus from the nose, nasopharynx or maxillary sinus before carrying out the displacement suction is self evident. In certain cases there is no immediate escape of mucopus, but an hour or two later the patient will experience a nasal or postnasal discharge of a considerable quantity of frank mucopus, and this is equally diagnostic of a chronic suppuration of the ethmoid sinuses.

Since using displacement suction in this way for the diagnosis of chronic ethmoid infections, I have been

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impressed by the large number of low grade chronic suppurative ethmoid sinuses that would otherwise have been overlooked. I have also been impressed by the frequency of systemic symptoms in ethmoid infections as compared to infections of the other sinuses, owing perhaps to the larger area for absorption in the ethmoid sinus.

Fig. 1 (case 3).—Sinuses of normal appearance.

These cases of obscure low grade ethmoiditis fall into five groups according to the predominating or presenting symptom.

The largest group is that in which the patient's chief complaint is pain or headache. The pain of chronic ethmoiditis may be felt in the cheek, ethmoid region, forehead, parietal region or ear. Like any sinus pain, it is worse following acute head colds and worse on bending forward. These characteristics suggest a sinus origin for the headache and yet the nasal passages appear normal in all respects and there may be no nasal symptoms whatever, while the x-ray examination may be negative for sinus disease.

CASE 1.—Mrs. E. B., aged 35, residing in the Panama Canal Zone, complained of a persistent right parietal headache for three months following a severe head cold. There were no nasal symptoms and a roentgenogram of the sinuses was negative except for a small, poorly developed ethmoid sinus on the right. Displacement suction, carried out because of the history of onset following a cold and the absence of any other demonstrable cause for the headache, removed a small amount of definite mucopus from the right nostril. This was repeated five times in the next two weeks with complete and permanent relief from the headaches.

CASE 2.—Mrs. F. D. J., aged 50, complained of neuralgic pains in the frontal and parietal region with chronic fatigue for several years. Except for a slight chronic postnasal mucoid discharge for the same period, she had no nasal symptoms and the nasal passages appeared entirely normal. A roentgenogram was negative except for a questionable thickening of the ethmoids. Displacement suction removed a small clump of mucopus from the right side. This was repeated eight times in two months, with complete relief from the headaches and 80 per cent relief from the postnasal discharge. Because of a basal metabolic rate of — 16 per cent, thyroid extract one-half grain (0.03 Gm.) a day was given. Many of these patients with low grade ethmoid infections show a slightly lowered metabolic rate which Mithoefer believes is a factor in causing the ethmoid infection. I am inclined to believe that the lowered metabolism is the result, not the cause, of the infection and that the administration of thyroid extract is usually unnecessary.

CASE 3.—Mrs. I. E. B., aged 43, complained of rheumatic pains in the arms, dizziness, headache and fatigue for three years with a postnasal discharge for about the same period. Roentgenograms of the sinuses were negative (fig. 1) and displacement suction of the ethmoid sinuses was normal, but an hour later the patient experienced a postnasal discharge of a large amount of frank mucopus followed at once by great relief from the headache. This treatment was repeated nine times in four months with complete relief from all the symptoms. There have been two recurrences of symptoms in a year and a half. Each recurrence was relieved after a few treatments.

In the second group of cases of obscure low grade ethmoid infection the presenting symptom was an infection in a remote organ, such as iritis, neuritis or arthritis:

CASE 4.—Mrs. A. C., aged 23, complained of an acute optic neuritis and iritis of three weeks' duration. There were no nasal symptoms whatever but a roentgenogram of the sinuses showed a thickening of the right ethmoid sinus. Because of this a series of neosilvol nasal packs had been carried out elsewhere without benefit to the eye condition. Displacement suction removed at once a large amount of mucopus from the right side. This treatment was repeated for five weeks until no further secretion was obtained. The eye condition began to improve after the second treatment and went on to complete recovery.

CASE 5.—C. F. A., a man aged 28, complained of optic neuritis of eight weeks' duration, not improved by removal of the tonsils three weeks before. For four years there had been a postnasal discharge and frontal headaches. A roentgenogram showed thickening of the left frontal and ethmoid sinuses (fig. 2). The nasal passages appeared normal but displacement suction removed thick white mucus from the left side. After

Fig. 2 (case 5).—Clouding of left ethmoid and frontal sinuses.

three weeks of this the eye condition improved but relapsed again two months later. A left intranasal ethmoidectomy, enlarging the ostium to the fronal sinus, was followed by complete freedom from the postnasal discharge and headaches for the first time in four years and by improvement in the optic neuritis.

While it may be objected that optic neuritis is often due to an undiagnosed multiple sclerosis and under-

goes a spontaneous remission, the presence of a low grade chronic ethmoiditis in these two cases cannot be denied while the close relationship between clearing up of the infection of the ethmoid sinuses and improvement in the eye condition is very suggestive of a causal relationship:

CASE 6.—D. D. P., a man aged 52, complained of tinnitus for one year. Hearing tests showed a high tone nerve deafness. For several years there had been a chronic postnasal discharge

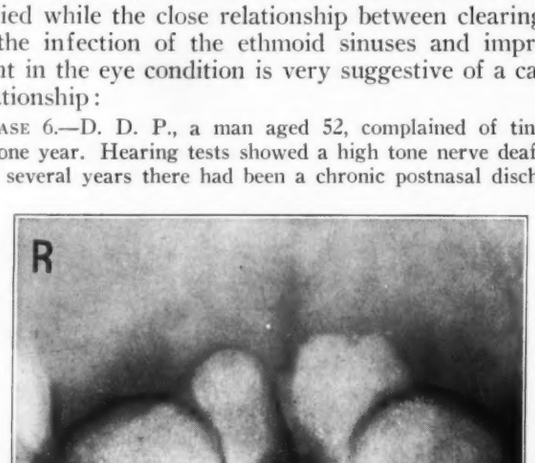

Fig. 3 (case 7).—Sinuses of normal appearance.

but no other nasal symptoms. A roentgenogram of the sinuses was negative and nasal examination was negative. Displacement suction was followed at first by an increased postnasal discharge, but after the third treatment the postnasal discharge, which had been present for several years, was entirely relieved and the tinnitus, which had been present constantly for one year, ceased.

CASE 7.—W. B., a man aged 35, had had an infectious type of arthritis for four years with a postnasal mucopurulent discharge, frequent nasal obstruction on the right and frontal headaches for the same period. Because of perfectly normal appearing nasal passages on repeated examinations both before and after the nasal mucosa was shrunk and the head was held forward, and because of negative x-ray examinations, he had been told that he did not have a sinus infection. The nasal symptoms and the arthritis continued, however, and no focus of infection for the arthritis could be found. Displacement suction removed a large clump of frank mucopus from the right ethmoid sinuses. With repeated displacement treatments the arthritis improved but the infection in the ethmoid sinuses did not clear up and mucopus was obtained each time. Finally an intranasal ethmoidectomy was followed by permanent disappearance of all arthritic symptoms one week later and permanent cessation of all nasal symptoms two week later.

The third group of patients with obscure low grade ethmoiditis complained of a chronic and persistent cough for which no cause could be found:

CASE 8.—C. D., a boy aged 10 years, had had a cough for three weeks without an antecedent cold. The previous winter he had had a similar cough for two months. A roentgenogram showed only a questionable clouding of the ethmoid sinuses, and the nasal passages appeared entirely normal. Displacement suction removed a small amount of yellow mucopus from the right side. The mucopus from the ethmoid cells and the cough disappeared after six treatments. A recurrence of cough two months later cleared up after two displacement treatments.

CASE 9.—M. S., a girl aged 10 years, had had frequent attacks of persistent bronchitis for several years. There were no nasal symptoms or abnormalities but an x-ray examination revealed clouding of the left ethmoid sinuses. Displacement suction was negative but was followed by a discharge of mucopus from the left nostril a half hour later. After five treatments the cough and the ethmoid infection cleared up. Two mild recurrences within the next four months each cleared up after one or two treatments, and since then (a year and a half) there has been no recurrence of the cough.

In the fourth group of patients the chief complaint was frequent head colds:

CASE 10.—Mrs. F. J., aged 46, complained of very frequent colds for eighteen months, coming on every few weeks and accompanied by fatigue and nervousness. Nasal examination and roentgenograms of the sinuses were negative. Displacement suction produced a moderate amount of definite yellow mucopus from the right side. After five treatments the symptoms were relieved. There have been three recurrences in a year and a half, each clearing up promptly after a few displacement treatments.

The last group of patients with obscure ethmoid suppuration had a fever of unexplained origin as the presenting symptom. This group is the most interesting to me because fever is rarely seen in chronic infections of the other sinuses:

CASE 11.—J. v. M., a girl aged 6 years, had been having an intermittent septic type of fever for six months, the temperature reaching 104 F. for about three days out of every week. Tests for undulant fever, typhoid, endocarditis, pyelitis and the like were all negative. There were no nasal symptoms, and the nasal passages appeared normal except for some redness and congestion of the mucosa. Displacement suction produced a moderate amount of mucopus from both sides. This treatment was repeated for two weeks with cessation of the fever and until no more mucopus was obtained. The fever has not recurred.

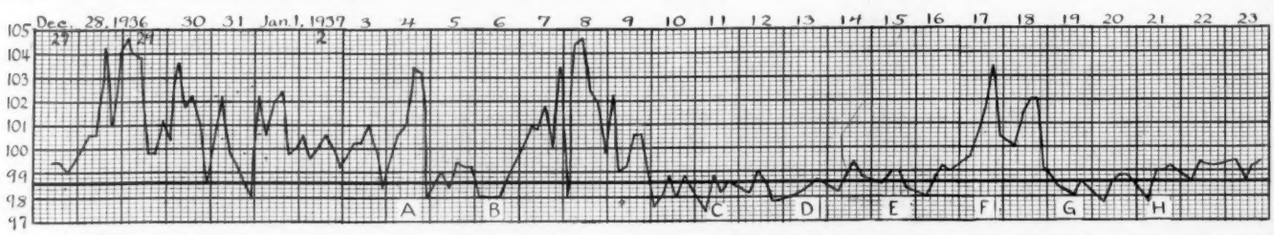

Fig. 4 (case 11).—Temperature chart during stay in hospital: *A*, mucopus from ethmoids by displacement suction; *B*, *C*, mucopus from ethmoids; *D*, small, *E*, very small, amount of mucopus from ethmoids; *F*, trace of mucopus from ethmoids; *G*, only mucus from ethmoids; *H*, nothing removed from ethmoids.

CASE 12.—S. A., a woman aged 24, had been having a fever of from 99 to 100 F. every afternoon and evening for two and a half months for which no cause had been found. Five months before she had had a severe head cold and this had never entirely cleared up: there had been a nasal twang to the voice and an occasional sense of congestion at the base of the nose. The nasal passages appeared entirely normal and a roentgenogram of the sinuses was negative except for thickening of the left ethmoid bone. After displacement suction green mucopus appeared in the nasopharynx. After five treatments all symptoms cleared up and have not recurred.

CASE 13.—E. E. P., a man aged 41, had had a fever as high as 104 F. lasting one or two days and occurring every three or four weeks with the symptoms of a slight head cold. The nasal examination was negative; the roentgenogram showed a slight thickening of the left ethmoid sinus. Displacement suction removed a small amount of greenish mucopus from the left side. The treatment was repeated three times. There have been no further attacks of fever for one year.

CASE 14.—R. D. C., a man aged 25, complained of a low grade fever for one and a half years following a severe head cold. A window operation for a left maxillary sinusitis had relieved the fever only temporarily and there was a persistent mucopurulent discharge. Displacement suction was negative but was followed by relief from the postnasal discharge and fever. This relief, however, did not last, and a few displacement treatments would again be necessary. Finally, an intranasal ethmoidectomy was carried out and permanent relief from the fever was obtained.

CONCLUSIONS

1. The displacement method of promoting drainage from the ethmoid cells will establish a diagnosis in many cases of chronic low grade ethmoid suppuration that would otherwise be doubtful or missed entirely.
2. Displacement suction will clear up many but not all chronic ethmoid suppurations.
3. Chronic suppuration of the ethmoid sinuses may exist with slight or obscure local symptoms, the presenting symptom being headache of obscure etiology, systemic infection such as arthritis, iritis or neuritis, chronic cough, frequent head colds or fever of unknown origin.

122 South Michigan Avenue.

FUNGOUS INFECTIONS OF THE HANDS AND FEET TREATED BY IONTOPHORESIS OF COPPER

PRELIMINARY REPORT

HOWARD W. HAGGARD, M.D.
MAURICE J. STRAUSS, M.D.
AND
LEON A. GREENBERG, PH.D.
NEW HAVEN, CONN.

The large number of remedies in use for the treatment of fungous infections of the feet and hands is evidence that not one is entirely successful. It is probable that all these remedies will kill fungi in vitro, but most fail to do so when applied to the skin. The fungi are in the deep layers of the epidermis, and the fungicide does not reach them. The efficacy of compound ointment of benzoic acid, the remedy most extensively employed, is due to the presence of salicylic acid, which causes desquamation with consequent partial exposure of the fungi.

The ideal method of treating fungous infections would be the introduction of a fungicide into the skin without injury to the skin. This we have attempted to do by passing copper, which is highly fungicidal, through the skin by iontophoresis. The results obtained with this therapy, reported here, are distinctly favorable. The great majority of patients treated by this method were promptly relieved of all symptoms of dermatophytosis.

Dr. Haggard is director of the Laboratory of Applied Physiology, Sheffield Scientific School, Yale University; Dr. Greenberg is instructor in the laboratory. Dr. Strauss is associate clinical professor of dermatology, Yale University School of Medicine.

Lowenfish [1] has reported the treatment of chronic dermatitis by cataphoresis with tap water. He mentioned an unsuccessful attempt to treat dermatophytosis by a method somewhat similar to the one we have used. Only nineteen patients with dermatophytosis were treated, and copper was only one of twelve chemicals used. It is possible that no extensive trial was given to copper. Lowenfish stated that a few patients showed clinical improvement but that fungi could still be found on the skin. Fungi, as has been shown, may be found on normal skin.[2] It is not the presence

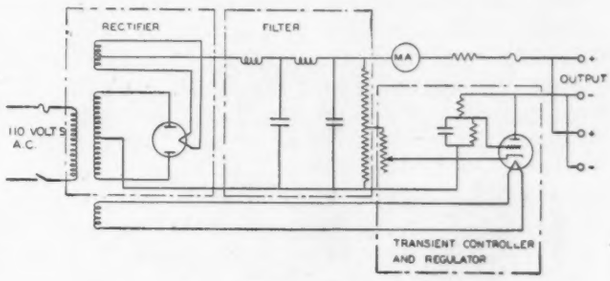

Fig. 1.—The circuit employed.

of fungi but the inflammatory process caused by them which constitutes dermatophytosis. Our results are based on the clinical changes occurring in patients whose dermatophytosis was treated by copper electrically introduced into the skin. Some of these patients may still have fungi on their feet, and probably most of them have come in contact with fungi from outside sources; but the fact remains that the majority have had relief from their symptoms and have remained clinically cured for a considerable period.

INTRODUCTION OF COPPER INTO THE SKIN

Copper was selected as the metal for iontophoretic introduction into the skin because of its well known fungicidal properties and its low toxicity. The supposition that copper could be introduced through the skin was confirmed by experiments on rats. The front legs of each rat were held in a small bath containing isotonic salt solution and the rear legs in a similar bath containing a 0.2 per cent copper sulfate solution. A copper electrode was immersed in each of the baths; that in the salt solution was connected to the negative and that in the copper solution to the positive pole of a source of direct current regulated to pass 6 milliamperes. As a control, rats were similarly immersed for twenty minutes but with no current flowing. The animals were killed and the rear legs washed thoroughly and skinned carefully to prevent any contamination from the copper solution. The legs were then incinerated in a porcelain crucible; the ash was dissolved in sulfuric acid, diluted with water, filtered and tested for copper. The determination of copper was made with a modification of the Benedict test ordinarily used for sugar. The solutions were prepared in the usual manner, except that the copper salt was omitted and dextrose added. In the presence of small amounts of copper the characteristic changes in color were obtained. This test was not sufficiently sensitive to cause a reaction from the normal copper content of tissues. The legs immersed in copper solution with no

1. Lowenfish, F. P.: Treatment of Chronic Dermatitis by a Cataphoretic Method, Arch. Dermat. & Syph. **37**: 797 (May) 1938.
2. Downing, J. G.; Nye, R. N., and Cousin, S. M.: Investigation of the Fungous Flora of Apparently Normal Skins, Arch. Dermat. & Syph. **35**: 1087 (June) 1937.

flow of current gave no reaction for copper. The legs immersed with the current flowing gave a strongly positive reaction for copper. A current flow of 6 milliamperes for twenty minutes should by calculation lead to the introduction of 2.37 mg. of copper. This copper after passing through the skin would be distributed throughout the body of the rats; the amount present in the legs was estimated from the tests to be about 0.5 mg.

APPARATUS USED FOR IONTOPHORESIS

In treating human beings the feet were immersed in rectangular enamel pans about 5 inches deep and the hands in bain-marie basins. Copper electrodes were used. The duration of treatment was twenty minutes. When the infection was on the feet, the hands were immersed in saline solution and the feet in 0.2 per cent copper sulfate solution; for infection of the hands the relations were reversed, and if both hands and feet were infected the solutions in the baths were changed at the end of twenty minutes and treatment was continued for an additional twenty minutes.

The positive pole of the source of current was attached to the electrode in the copper solution and the negative to that in the saline solution. Much smaller currents were used than in the experiments of Lowenfish;[1] instead of from 15 to 40 milliamperes we employed from 4 to 6 milliamperes if only one hand or foot was immersed and from 8 to 10 milliamperes if both were immersed. Early in the investigation a battery fitted with a rheostat was used as a source of current. This arrangement, as well as the apparatus used by Lowenfish, has serious drawbacks: The current can be gradually increased to prevent any shock,

Fig. 2.—The apparatus ready for use.

but if the hands or feet are taken out and reimmersed the full strength of current is immediately received with a severe and unpleasant, possibly dangerous, shock. To avoid this occurrence it was necessary to watch each patient carefully during the entire period of treatment. To obviate the danger of shock, a special apparatus was developed for us by Prof. Albert G. Conrad of the Yale School of Engineering.[3] The circuit employed is shown in figure 1. The apparatus operates on 110 volt alternating current, which is rectified to direct current in the usual manner. The supply to the electrodes is regulated by a rheostat and read from a milliammeter. In this circuit the patient's

Fig. 3 (case 28).—The hands at the beginning of treatment.

body acts as a switch, so that the flow of current is interrupted as soon as the hands or feet are withdrawn from the bath; it is established again when the hands are reimmersed, but the current, instead of rising instantaneously to the maximum, builds up slowly. This important feature does away with all possibility of unpleasant sensations and all dangers of serious shock; it also removes the necessity of carefully regulating the current on immersion and makes the treatment entirely safe. It has contributed materially to the facility of the method. Figure 2 shows the apparatus complete with baths for feet and hands.

PREPARATION OF THE PATIENT FOR TREATMENT

When possible each patient was treated two or three times a week. During the entire period no other treatment was used; in a few patients hydrous wool fat was applied to denuded areas to prevent the socks from sticking to the feet. The preparation of the hands and feet for immersion was found to be particularly important. The infected area was often covered with a greasy exudate which was resistant to the passage of current in precisely the regions where penetration was desired. A high resistance in these regions diverts the current and therefore the copper to the normal skin. To avoid any possible complicating factor, no means of cleaning the feet except mechanical removal of crusts and the use of soap and water was employed in the cases reported here. Since the completion of this series, however, a preliminary soaking of the feet or hands for a few minutes in a dilute solution of sodium hypochlorite has been found highly efficacious in preparing the skin for treatment.

3. The apparatus was assembled in a form suitable for clinical use by the Mine Safety Appliances Company of Pittsburgh.

RESULTS

Treatment was given to thirty-seven patients. The diagnoses of dermatophytosis were made clinically. Twenty of the patients had shown clinical signs of infection for more than a year and one for twenty-five years. The majority of the infections were severe and of long standing. Unquestionably in some patients with lesions on both feet and hands those on the hands may have been dermatophytides containing no fungi but appearing as an allergic manifestation. This possibility was ignored, and the hands were treated as well as the feet.

The accompanying table gives the clinical data concerning each patient and the results obtained from treatment. The types of eruption are designated as

Fig. 4 (case 28).—The feet at the beginning of treatment.

erythematous, scaly, desquamating, denuded, macerated, fissured, hyperkeratotic, vesicular and pustular. The meaning of these terms is clear with the possible exception of desquamating and denuded. In this study the former term was used to denote what the patient called "peeling"; the latter, that condition in which the upper layers of the skin had separated, leaving large raw areas.

The results of treatment were most striking in those cases in which the infection was particularly active and showed bullae and vesicles. In most instances subjective symptoms disappeared within twenty-four hours after the first treatment and the vesicles flattened out without rupturing. One of the first results in nearly all cases was a lessening of the moisture in the skin; this fact was commented on by most of the patients. The cuticle about the nails, any loose scales and the tops of the bullae or vesicles became blue with each treatment. This coloration frequently disclosed the presence of vesicles which might otherwise have gone unnoticed. Healing took place beneath the bluish crusts, which eventually were desquamated, leaving

Fig. 5 (case 28).—The improvement of the hands.

apparently normal skin. When the entire extremity showed dry, normal-appearing skin, the treatment was discontinued. Twenty-six, or 70 per cent, of the

Fig. 6 (case 28).—The improvement of the feet.

thirty-seven patients who were given treatment obtained a clinical cure; the remaining eleven are still under treatment.

The number of treatments necessary to attain a cure varied from four given over a period of two weeks

to eighteen given over a period of eight weeks. The average number of treatments was slightly more than six. Of the twenty-six patients discharged as cured, three have finished treatment so recently that follow-up has not been noted, but the other twenty-three have been followed for periods varying from three to six months. Of these, five suffered recurrences of some degree. Patients 1 and 7 reverted to a condition as severe as before treatment was started. Patients 6, 11 and 13 had mild recurrences.

Patient 28 gave a history of having had vesicles on his feet for twenty-five years. When first seen he had been walking with the aid of crutches for seven months and had been unable for the past few days to do even that because of blisters on his hands. The hands and one foot were literally covered with small thick-walled multilocular vesicles and large thin-walled pustules. Improvement was rapid and steady up to the point of almost complete clinical cure, when a relapse occurred; improvement followed further treatment. This has happened several times, but the patient is able to wear shoes, to walk without the aid of crutches and to follow his occupation. Patient 31, despite twenty treatments over a period of two months, has shown no improvement. Patient 34 has attained a clinical cure of the lesions on his feet (the lesions remaining healed for two and one-half months) but has persistent vesicles on his hands. Patient 35 has, in spite of fifteen treatments, considerable maceration in the fourth interspace of each foot. Patients 1, 10, 14, 22 and 29 presented, in addition to typical dermatophytosis, eczematoid lesions of the arms and legs. In three of these the eczematoid lesions disappeared while the feet were being treated. In the other two, 10 and 29, the lesions improved.

The data presented here are in the nature of a preliminary report. We have attempted so far to answer the question Does dermatophytosis of the hands and feet respond to iontophoretic administration of copper by the method described here? We find that in the majority of instances it does. The study has not, because of the demands of the patients, been extensively controlled. An attempt was made to treat only one foot when both were involved; in such cases only the treated foot responded. Saline solution used in both baths caused no improvement in the few cases in which it was tried. Similarly, soaking in copper sulfate solution without the application of current brought no relief.

We believe that the clinical cures obtained result from the action on the fungi of the copper driven through the skin by the electric current.

Summary of Cases

Patient	Duration	Degree	No. of Treatments Given	Length of Treatment, Weeks	Result	Recurrence or Reinfection	Clinical Type of Infection
1. M. B.	3 months	Moderate	10	4	Healed	Recurrence at 5 wks.	Vesicles
2. J. C.	1 year	Severe	9	4	Healed	.....	Desquamation, maceration
3. D. C.	Few weeks	Moderate	16	8	Healed	No recurrence	Maceration, vesicles, erythema, scaling
4. R. F.	1 year	Moderate	4	2	Healed	No recurrence	Maceration, desquamation *
5. S. G.	Several years	Mild	14	7	Healed	No recurrence	Desquamation on feet, vesicles on hands
6. T. K.	4 months	Moderate	6	3	Healed	Fissures but no maceration	Maceration, desquamation
7. G. M.	6 months	Mild	8	4	Healed	Recurrence at 1 wk.	Vesicles, maceration
8. J. P.	6 months	Mild	6	7	Healed	No recurrence	Maceration, fissures
9. O. R.	3 months	Moderate	10	7	Healed	No recurrence	Erythema, scaling, fissures
10. R. R.	Few weeks	Severe	9	7	Healed	No recurrence	Bullae and denuded areas
11. T. R.	2 years	Moderate	9	4	Healed	Recurrence at 1 mo.	Maceration on feet, vesicles on hands
12. A. S.	Several years	Mild	7	4	Healed	No recurrence	Erythema, vesicles
13. P. S.	1 year	Mild	9	6	Healed	Mild recurrence	Vesicles
14. T. S.	3 months	Mild	6	2½	Healed	No recurrence	Maceration, vesicles
15. E. T.	2 months	Mild	13	6	Healed	No recurrence	Vesicles
16. D. W.	2½ years	Severe	8	5	Healed	No recurrence	Erythema, vesicles, desquamation
17. G. W.	Several years	Mild	6	4	Healed	No recurrence	Vesicles
18. J. W.	1½ years	Moderate	6	3½	Healed	No recurrence	Erythema, vesicles, scaling
19. S. N.	2 years	Moderate	7	3½	Healed	No recurrence	Maceration, desquamation
20. S. Y.	1 year	Mild	12	7	Healed	No recurrence	Erythema, scaling
21. B. S.	1 month	Severe	18	8	Healed	No recurrence	Bullae
22. L. H.	2 years	Severe	10	6	Healed	No recurrence	Erythema, vesicles
23. L. G.	1 year	Moderate	5	2	Healed	No recurrence	Vesicles
24. R. G.	1 year	Moderate	7	3½	Healed	.....	Bullae
25. A. O.	2 months	Moderate	4	2	Healed	No recurrence	Bullae
26. G. Mc.	2 months	Moderate	6	3	Healed	.....	Bullae, denudation
27. R. A.	18 months	Severe	4	4	Improved	.....	Bullae, maceration, denudation, secondary infection
28. B. B.	25 years	Severe	30	14	Improved	.....	Erythema, maceration, denudation
29. J. B.	Few weeks	Severe	7	4	Improved	.....	Vesicles, desquamation
30. S. B.	5 years	Moderate	10	5	Improved	.....	Vesicles and maceration on feet; eczematoid lesions and vesicles on hands
31. R. C.	10 years	Severe	20	8	Poor	.....	Vesicles, scaling, erythema on one palm only
32. L. G.	Several years	Moderate	12	6	Improved	.....	Maceration and denudation on feet; erythema, vesicles and fissures on hands
33. A. M.	Few days	Severe	5	2	Improved	.....	Vesicles on both feet and hands
34. G. N.	1 year	Moderate	6	3	Feet healed; hands same	.....	Maceration, fissures
35. J. T.	3 months	Moderate	15	7	Almost well	.....	Maceration between toes; erythema on dorsum of feet
36. H. W.	6 months	Moderate	11	8	Improved	.....	Eczematoid lesions
37. J. P.	2 years	Moderate	12	12	Almost well	.....	

* Only one foot treated; other unchanged.

COCCIDIOIDAL OSTEOMYELITIS

PAUL E. McMASTER, M.D.
AND
CHARLES GILFILLAN, M.D.
LOS ANGELES

The surgical and pathologic aspects of bone and joint involvement in coccidioidal granuloma have received little attention in published articles. Twenty-four such cases have been studied and form the basis of this report. The condition is quite often misdiagnosed as either a pyogenic or a tuberculous lesion.

Wernicke [1] reported the first case of coccidioidal granuloma in 1892 from South America. Rixford and Thorne [2] reported two cases from California in 1894 and two years later Rixford and Gilchrist [3] gave a detailed report of these two cases and suggested the name Coccidioides immitis for the organism, which was later termed Oidium coccidioides and the disease coccidioidal granuloma by Ophüls [4] in 1905. The exact classification of the organism is still unsettled. The North and South American strains of the disease have been presented by Jordon and Weidman.[5]

Numerous reports dealing with the condition to 1931 are listed by Carter [6] in a review of the subject and a discussion of the roentgenographic diagnosis.

GENERAL CONSIDERATION

The disease is caused by a specific fungus, Coccidioides immitis. The adult form of this organism in animal tissues is a spherule varying from 5 to 60 microns in diameter. It contains numerous endospores and has a doubly refractile capsule. The released endospores on rupture are capable of growing into adult spherules. These, if grown in culture mediums (Sabouraud's medium), will develop into mycelia. Hyphae of these undergo segmentation with the development of endospores, which may reproduce the organism either in mycelial form in culture or as spherules in animal tissues. Mycelia do not develop in animal tissues.

Although occurrences of the disease are occasionally reported in the eastern and midwestern sections of the United States,[7] a majority of the cases occur either in residents of California or people who have visited the state, and the San Joaquin Valley appears to be an endemic region. It is possible that cases occur and go unrecognized outside of California, being mistakenly diagnosed.

The organisms gain entrance to the body through the respiratory tract and the skin. Jacobson [8] considers that the mode of infection is by the bite of an insect. The disease has been produced in animals through the abraded skin by Ahlfeldt.[9] Gastrointestinal lesions are uncommon. Hence it is probable that this tract is not a frequent portal of entry. Transmission of the infection from patient to patient has not been established.

The dissemination is by blood and lymph streams and by direct extension. Multiple foci are more commonly seen in a patient than is a single focus. At autopsy it is not uncommon to find lungs, liver, spleen, meninges, subcutaneous tissue and bones involved.[10]

BONE AND JOINT INVOLVEMENT

Twenty-four patients with coccidioidal infections proved by demonstrating the organism either in culture or by microscopic section of bone and joint have been studied, of whom two were women and the others men. The average age of the patients was 32 years. Thirteen of the twenty-four patients died, and each had an associated active pulmonary focus. Ten of these thirteen fatal cases showed multiple osseous lesions, while three presented only one demonstrable bony focus. The eleven patients who survived were studied from a few months to seven years after discharge from the hospital, and only two of them had an infection of the lung; in both instances this was not marked and underwent healing. Five of the patients who survived had multiple bone or joint infections, while six had only a single lesion.

Fig. 2.—Primary coccidioidal infection of the lower part of the humerus. Bone destruction, some slight bony production, ossifying periostitis and evidence of joint invasion are present.

There were four patients in the series younger than 20 years, of whom three survived.

Cutaneous infections, excluding those of draining sinuses overlying osseous infections, occurred as nodes or papules in six cases.

Owing to lack of space, this article is abbreviated here by the omission of several illustrations. The complete article appears in the authors' reprints.

From the Departments of Orthopedic Surgery of the Los Angeles County Hospital and the University of Southern California School of Medicine.

1. Wernicke, R.: Ueber einen Protozoandefund bei Mycosis fungoides, Centralbl. f. Bakt. **12:** 859, 1892.
2. Rixford and Thorne: Case of Protozoic Dermatitis, Occidental M. Times **8:** 704, 1894.
3. Rixford, Emmet, and Gilchrist, T. C.: Two Cases of Protozoan (Coccidioidal) Infection of the Skin, Johns Hopkins Hosp. Rep. **1:** 209, 1896.
4. Ophüls, Wilhelm: Further Observations on a Pathogenic Mold Formerly Described as a Protozoon (Coccidioides Immitis, Coccidioides Pyogenes), J. Exper. Med. **6:** 443 1905; Coccidioidal Granuloma, J. A. M. A. **45:** 1291 (Oct. 28) 1905.
5. Jordon, J. W., and Weidman, F. D.: Coccidioidal Granuloma: Comparison of the North and South American Diseases with Special Reference to Paracoccidioides Brasiliensis, Arch. Dermat. & Syph. **33:** 31 (Jan.) 1936.
6. Carter, R. A.: Coccidioidal Granuloma: Roentgen Diagnosis, Am. J. Roentgenol. **25:** 715 (June) 1931.
7. Cummins, W. T.; Smith, J. K., and Halliday, C. H.: An Epidemiologic Survey with a Report of Twenty-Four Additional Cases, J. A. M. A. **93:** 1046 (Oct. 5) 1929.
8. Jacobson, H. P.: Coccidioidal Granuloma: A Clinical and Experimental Review with Case Reports, Arch. Dermat. & Syph. **21:** 790 (May) 1930.
9. Ahlfeldt, F. E.: Studies in Coccidioidal Granuloma: Mode of Infection, Arch. Path. & Lab. Med. **2:** 206 (Aug.) 1926; Special Observations on Morphology of Coccidioides Immitis, J. Infect. Dis. **44:** 277 (April) 1929.
10. A general and more detailed study of the disease is contained in the publication of Special Bulletin 57 by the California State Department of Public Health in 1931, which in turn is supplemented to July 1, 1936, by a special report in California and Western Medicine (**46:** 282 [April] 1937).

Practically all bones of the body excluding those of the face were involved in this series. Those most commonly affected were the tibia, vertebrae, sternum, tarsal bones, humerus, skull, fibula and radius.

Bone and joint infections are considered secondary to a primary infection at the portal of entry, such as

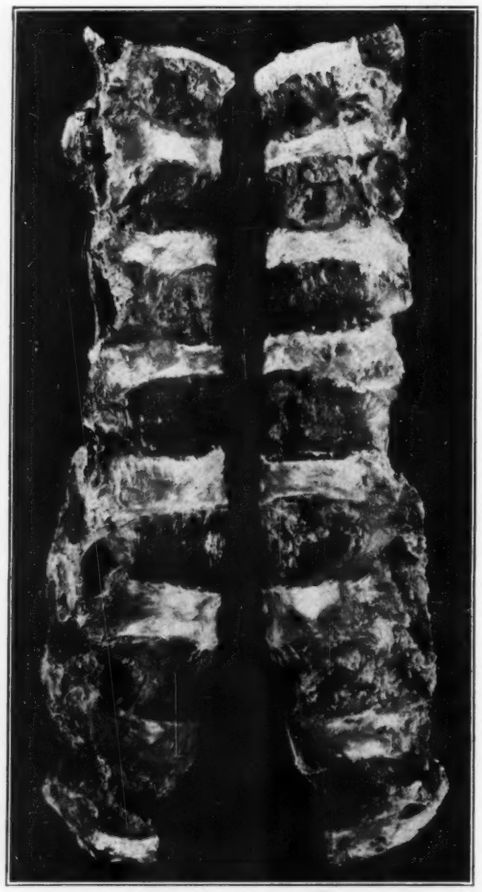

Fig. 4.—Gross specimen showing cavities of bone destruction, practically no collapse of the vertebral body and preservation of intervertebral cartilage. Large paravertebral abscesses were present.

the lung, mediastinal lymph nodes and skin, although as in tuberculosis of the bones and joints an active primary infection may not be demonstrable.

Four of the twenty-four cases studied exhibited primary localization in synovial membranes while the remainder were initially osseous in location. Some of the latter cases gave rise to joint infections by direct extension. Of the four cases of primary infection of the synovial membrane, one was of the ankle and secondarily invaded the ankle bones. Another was of the hip joint, giving rise to a spontaneous dislocation. The other two were of the knee joint.

Only four of the twenty-four cases occurred in children with open epiphysial lines. One of these four cases involved primarily a radial metaphysis while another occurred in a radial epiphysis. A third case exhibited initial localization in both a lower radial and a lower tibial epiphysis. The remaining infection was primary in the synovial membrane of the hip joint.

ROENTGENOGRAPHIC FEATURES

Almost all bones of the body excepting those of the face were involved in this series, and multiplicity of foci was common. The osseous lesions usually occurred in regions of cancellous bone either subperiosteal or central in the spongiosa. It is of interest that lesions in the long bones occurred near the ends. Shaft and medullary involvement was not noted except from direct extension. Short tubular bones, as the phalanges, exhibited what was interpreted as primary shaft lesions. The cancellous structure of vertebral bodies was the most common area of spinal involvement; however, cortical bone of the neural arches as well as spinous processes were in some cases initially infected. Flat bones, such as the sternum and the scapulae, showed destructive lesions usually associated with overlying soft tissue swellings. Primary localization occurred in both the metaphysis and the epiphysis.

Epiphysial cartilage, when present, offered no barrier to the spreading disease in some cases. Cortical bone overlying cancellous infections was at times destroyed from direct extension. Articular cartilage and cortex were invaded and destroyed by direct extension from a primary osseous lesion, while marginal erosion of these structures, which at times preceded ankylosis, occurred from primary infections of the synovial membrane.

The roentgenographic picture is somewhat dependent on the stage and virulence of the disease. Bony foci in the early and acute stages are primarily destructive, with hazy outlines, little if any surrounding bony production and usually no demonstrable periostitis.

Fig. 5.—End result of coccidioidal infection showing bony fusion between fifth and sixth cervical vertebral bodies as well as laminas and spinous processes. This patient was treated only by immobilization.

The more common chronic form of coccidioidal infection of bone exhibits a destructive type of lesion, with associated bone production and more often than not an overlying ossifying periostitis (figs. 1 and 2). Some of the osseous lesions will show an irregular margin with variable amounts of new bone formation. Others, however, will present a fairly sharply out-

lined wall about a cystlike cavity, being slightly suggestive of a bone cyst. At times these spaces may even show a tendency to trabeculation, giving a multilocular appearance.

Although epiphysial cartilage seems to offer no special barrier to the progress of the disease, interverte-

Fig. 7.—Bony ankylosis of tibio-astragalar joint following conservative treatment by immobilization in a plaster cast.

bral cartilage does not appear to be destroyed as early by coccidioidal granuloma as by a tuberculous infection (fig. 3). The vertebral body lesions tend to remain localized longer or to perforate through cortex forming paravertebral abscesses rather than destroying intervertebral cartilage, at least in the earlier stages. However, in the later stages of coccidioidal spondylitis, intervertebral cartilage is destroyed, which may lead to bony ankylosis if the patient survives (fig. 5).

Involvement of the skull occurs in both the outer and the inner tables and, as pointed out by Carter as well as by Abbott and Cutler,[11] presents small circumscribed punched out areas of destruction.

Carter mentioned that the disease has a special predilection for bony prominences such as the tibial tubercle, the malleoli, the condyles of the humerus, the olecranon and the styloid processes of the radius and ulna. These regions are not uncommonly involved in an essentially destructive lesion and if so are highly suggestive of coccidioidal infection (fig. 6).

The joints are both primarily and secondarily affected. In the former only the synovial membrane may be involved, in which case roentgenograms show only capsular thickening. However, a progression of this process will lead to marginal destruction simulating the changes seen in tuberculosis. A differential roentgenographic feature of coccidioidal arthritis compared to tuberculous arthritis is the less pronounced regional bony atrophy so characteristic of the latter. Joints are also secondarily invaded from adjacent bony infections, which are not halted in their spread by epiphysial or articular cartilage. The cartilage space of the joints is gradually narrowed, leading to bony ankylosis if the patient survives.

An ossifying periostitis overlying a bony focus is quite frequently present although not usually seen in the early stages (fig. 6). This feature is a diagnostic aid in differentiating a tuberculous infection in which an ossifying periostitis is infrequent, except in the rather rare tuberculous lesions of the shaft. The coccidioidal lesion is differentiated from chronic pyogenic osteomyelitis in which periosteal ossification occurs but in which there is usually much more sclerosis of cortical and cancellous bone than in coccidioidal lesions.

Infection of cancellous bone spreads by direct extension, usually causing erosion or destruction of overlying cortex. Rarely is cortical expansion seen. The process may progress directly through epiphysial cartilage and into the neighboring joints. Extension into the medulla or shaft occurs much less frequently.

Progressive healing of coccidioidal lesions by bony sclerosis is noted, as is healing of joint infections (fig. 7).

PATHOLOGIC CHANGES

The coccidioidal foci of bones of those patients who have died of the rather acute form of the disease show grossly necrosis and abscess. There is little if any evident production of tissue in the surrounding

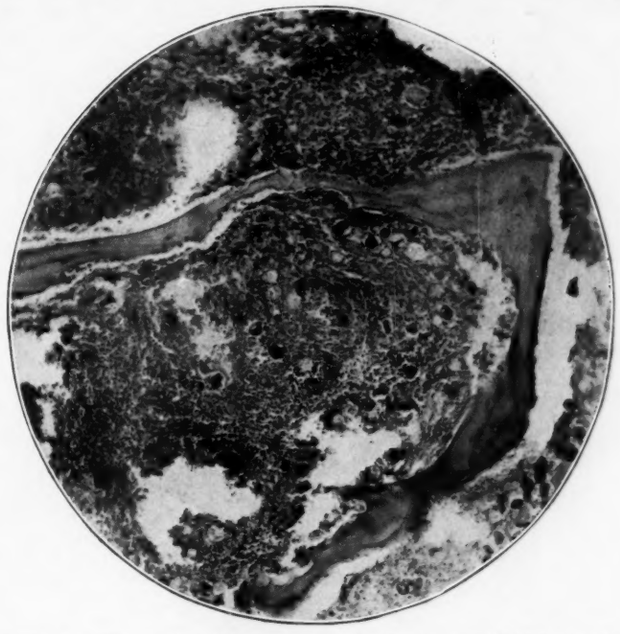

Fig. 9.—Microscopic section (low power) showing coccidioidal granulation tissue producing lacunar absorption of bony trabeculae. Numerous giant cells of the foreign body and Langhans type are present.

bone. Cortex may be partially destroyed with an associated abscess of the soft tissue. Overlying periosteum may appear edematous and thickened or partially destroyed.

The osseous lesions of the chronic type of the disease reveal either an abscess or a cavity filled with

11. Abbott, K. H., and Cutler, O. I.: Chronic Coccidioidal Meningitis: Review of Literature and Report of Seven Cases, Arch. Path. **21**: 320 (March) 1936.

soft to firm granulation tissue or spongy bone with interstices filled with grayish granulation tissue (fig. 4). Bony "sand" is sometimes palpable in the regions of liquefaction necrosis. Occasionally larger sequestrums are seen. The surrounding bone may appear either hyperemic or irregularly sclerotic, and

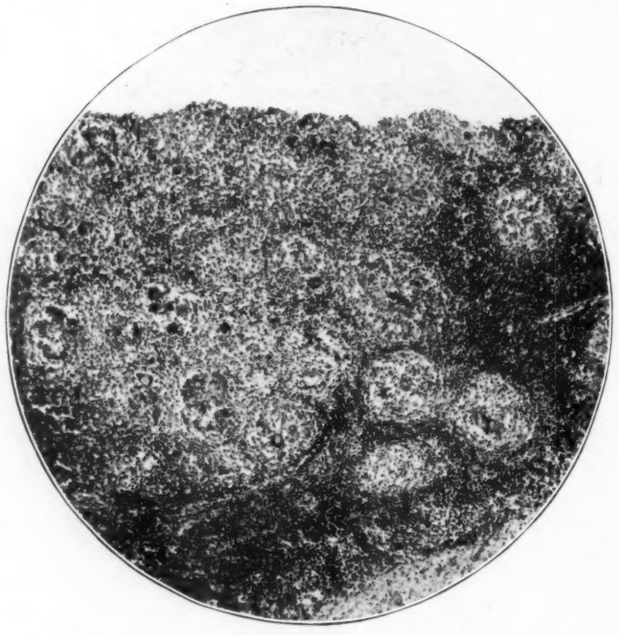

Fig. 11.—Microscopic section (low power) of coccidioidal granulation tissue (ankle joint), showing marked similarity to tuberculous granulation tissue.

at times the region of destruction will appear cystic with varying degrees of bony sclerosis of the walls. The cortex overlying a cancellous lesion may be destroyed and an adjacent abscess in the soft tissue or a granulomatous mass noted. Adjacent to the region of cortical destruction a thickened periosteum is noted, which quite often will show ossification. These same periosteal reactions may be present overlying cancellous lesions, even though there is no apparent erosion of cortex.

Examination of infected joints shows a grayish thickened synovial membrane. Free fluid ranging from serous to seropurulent is also noted in some cases. Articular cartilage reveals marginal erosion by granulation tissue, which also usually involves articular cortex (fig. 8), and pannus may be seen. Segments of thinned articular cartilage may be separated from underlying cortex by hyperemic granulation tissue.

HISTOPATHOLOGIC CHANGES

Microscopic studies of the bony lesions in the acute form of the disease reveal necrosis and abscess, osteoclastic destruction of bone and very slight if any new bone formation. Coccidioidal spherules may be present.

The more common chronic bony lesions exhibit coccidioidal granulation tissue or abscess. The granulation tissue is composed of round cells, some polymorphonuclear leukocytes, histiocytes, vascular spaces, Langhans giant cells, occasionally typical "tubercle formation" and coccidioidal spherules. The latter either lie free in the stroma or are engulfed in a giant cell or lie in the center of a "tubercle." The spherules have a doubly refractile capsule and contain numerous small endospores. Trabeculae of bone, if adjacent to the granulation tissue, show as a rule serrated surfaces, and osteoclasts, more commonly of the mononuclear type but occasionally of the multinucleated type, occupy these lacunas (fig. 9). Partially or completely dead fragments of bone are seen. Some new bone formation from osteoblastic activity may be present.

Abscess or liquefaction necrosis shows a rather amorphous débris of cellular elements, serrated spicules of dead bone and coccidioidal spherules, some of which appear dead. The spherules are not present in all microscopic fields of either the granulation tissue (which may in some areas appear to be nonspecific) or abscess. The spherules should be searched for carefully, because if found they substantiate the diagnosis. If they are not found the diagnosis can be only presumptive.

The periosteal reaction shows usually only a nonspecific type of chronic inflammation and ossification.

Destruction of bone by coccidioidal granulation tissue appears to take place by osteoclastic activity, chiefly by mononuclear and to a lesser degree by multinuclear giant cells.

Cartilage is at times attacked and destroyed by the granulation tissue (fig. 10).

Coccidioidal synovitis, which may be either primary or secondary to a regional bony focus, shows thickening of the membrane, infiltrations of round cells, plasma cells and some polymorphonuclears, histiocytes, coccidioidal spherules and typical Langhans giant cells. The appearance may be strikingly similar to tuberculosis, necessitating a search for the diagnostic spherules (fig. 11). A spherule may be either loose in the stroma or engulfed in a Langhans giant cell (fig. 12) or present

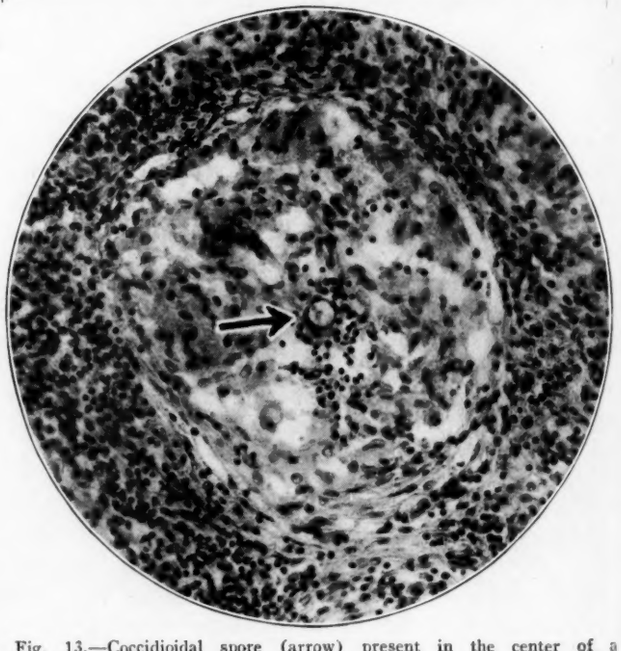

Fig. 13.—Coccidioidal spore (arrow) present in the center of a "tubercle."

in the center of a "tubercle" (fig. 13). Marginal erosion of articular cartilage and cortex occurs by direct extension from the infection of the synovial membrane. Subchondral invasion of granulation tissue, usually of a nonspecific nature tending to separate cartilage from underlying bone, may occur. The articular cartilage becomes thinned by action of the granulation tissue.

Pannus is usually present and may be either of a nonspecific nature or quite amorphous.

Microscopic evidence suggests that both bone and cartilage are destroyed by direct cellular activity of the granulation tissue. It is further assumed from microscopic studies that the coccidioidal pus has no direct destructive action on either bone or cartilage.

TREATMENT

The treatment of coccidioidal infections of bones and joints is of a general as well as of a local nature. If the patient has an associated active pulmonary lesion, this must receive special attention, for all such patients in our series died except two who had minimal pulmonary foci. General supportive measures as well as rest and immobilization of the involved bone or joint lesion are indicated. The latter measures are requisite to prevent metastatic spread of the disease, especially since the disease has a tendency to multiplicity of foci.

The question arises whether conservative or surgical procedures should be instituted in the handling of bone and joint lesions. There are cases in which involved parts have been immobilized with plaster of paris casts that have resulted in improvement and even apparent cures. This is probably the treatment of choice in the acute and severe general infections in which the patient is too ill to stand surgery.

Chronic infections in which bone abscesses are present should be treated by surgical drainage with saucerization of the area by removing the surrounding infected bone. The cavity is packed loosely with petrolatum gauze to allow for granulation from the bottom and the part immobilized in plaster of paris casts after the method of Orr.

Cures of infected joints appear to result only from ankylosis; hence treatment should be directed to this end. Prolonged immobilization of the infected part in casts in addition to general supportive treatment may accomplish this end if the patient does not succumb to the disease process during the interval. Operative arthrodesis in chronic joint infections, as for tuberculosis, seems indicated, with subsequent immobilization until ankylosis occurs. This applies to spinal as well as to peripheral joint lesions.

Amputations were performed in three cases, one of which was for an infected large toe and two were for diseased ankles. All three patients survived but none had active lung lesions. Since the mortality is rather high in this disease and the chance of multiple foci developing is common, removal of a peripheral, well advanced bone or joint infection by amputation should be considered and is at times indicated. This treatment should also be considered, even in cases in which there are associated pulmonary lesions, excepting perhaps the florid acute ones, for with amputation of a major peripheral infection the patient should have a better chance of overcoming the general toxemic effects of the disease.

In cases presenting multiple bone and joint lesions the treatment will depend on whether or not there is an active pulmonary lesion, which again, if present, must receive initial and vigorous attention. Conservative or surgical measures for the peripheral lesions will be determined by how far advanced the process is and by the general condition of the patient.

In addition to either conservative or surgical procedures in the treatment of bone and joint infections, whether single or multiple, general supportive measures and usually absolute bed rest are necessary. There appears to be no specific medication, although colloidal copper, antimony and potassium tartrate and iodides have been given with variable success. Jacobson has recently made and used a coccidioidal vaccine with which he claims to have had good success.

1930 Wilshire Boulevard.

DIAPHRAGMATIC FLUTTER WITH SYMPTOMS SUGGESTING ANGINA PECTORIS

RICHARD W. WHITEHEAD, M.D.
CLOUGH T. BURNETT, M.D.
DENVER
AND
JOHN B. LAGEN, M.D.
SAN FRANCISCO

A clinical syndrome of diaphragmatic flutter with symptoms of angina pectoris occurring in a man of 57 was described under the foregoing title, in THE JOURNAL by Dr. W. B. Porter[1] of Richmond, Va., about two months before the same patient was admitted to the Colorado General Hospital under another name. Dr. Porter described the patient as a "deep sea diver."

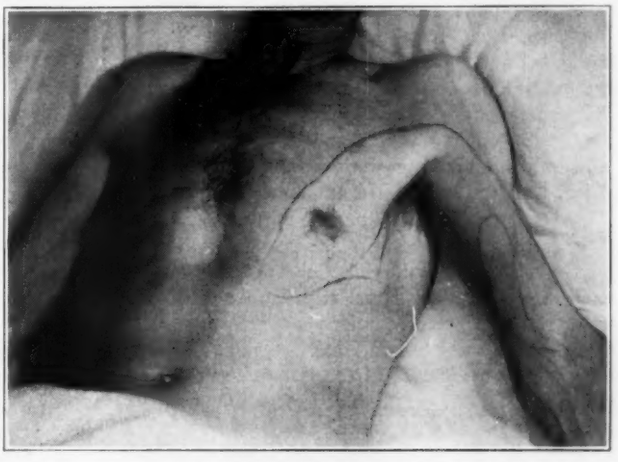

Fig. 1.—Distribution of pain.

To us he stated that he was a "trapper" from the high mountains and that he had been living and working as a trapper near Berthoud Pass—an average elevation of 13,800 feet above sea level. This report will serve as supplementary to that of Dr. Porter, presenting certain similarities, certain additional complaints and certain discrepancies. A telegram under date of Jan. 29, 1937, from Dr. William J. Kerr of San Francisco indicated that the same patient was in the Hospital of the University of California. A supplementary report from that institution is appended.

The patient was brought to the hospital May 20, 1936, in a police ambulance. At the time of entrance he complained of

From the Departments of Physiology and Pharmacology and Medicine, University of Colorado School of Medicine. With a supplementary report by John B. Lagen, M.D., Department of Medicine, University of California.

Dr. O. Leonard Huddleston of the Department of Physiology and Pharmacology made the oscillograph records. Dr. Bernard Grossman made many clinical observations. Miss Margaret Burnett, medical social worker, made the social studies.

1. Porter, W. B.: Diaphragmatic Flutter with Symptoms of Angina Pectoris, J. A. M. A. **106**: 992 (March 21) 1936.

extremely severe anginal pains over the precordium. These pains were said to extend up into the neck on the left side and down the inside of the left arm, and there was a tingling sensation in the last two fingers on the left hand. Frequently during this and subsequent attacks the patient complained of a cramping sensation in the second, third and fourth fingers of the left hand and there appeared to be spasm in these digits. In figure 1 is shown the pain distribution noted in this patient, which is quite typical of that observed in certain cases of angina pectoris. He was breathing very slowly at the time of entrance. He stated that he had come down from the mountains and had a sudden attack of pain, following which he became unconscious. He described the pain as a "blocking of the heart." The family history, as stated, was essentially negative. The patient claimed that he had always been a miner and trapper and that he had worked in hard rock mines up until about ten years ago, at which time he was told that he had pneumoconiosis. He stated that he had left the mines at that time. The past history revealed that he was shot through the jaw at one time. He had malaria when a boy. He gave a history of having had ticks removed recently. The present illness began May 20, 1936, at about 7 p. m., as already described.

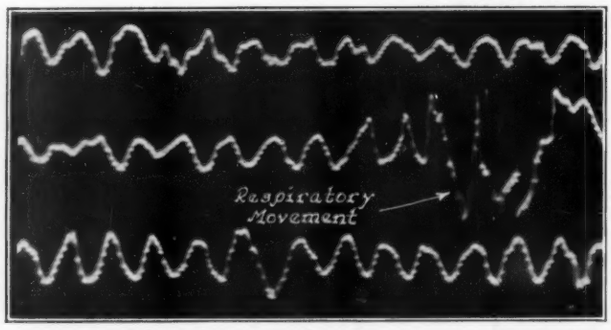

Fig. 2.—Sound record of extraneous respiratory sounds recorded from right base anterolaterally May 25, 11:15 a. m.

On physical examination the patient was sitting in bed in apparently extreme pain. The mouth was edentulous and the tonsils were injected. The chest was symmetrical and the expirations were equal and regular but diminished. The lungs were resonant to percussion; no rales or pleural rubs were heard. The heart was normal, the rate 64 and regular. Some tenderness was elicited at the left pectoral border in the fourth intercostal space. The blood pressure was 110 systolic, 80 diastolic. Abdominal examination was negative. There was no cervical or axillary adenopathy. There was a white linear scar at the hair line above the right forehead. The reflexes were physiologic.

One of us (C. T. B.) saw the patient May 21 in an attack of severe pain. The patient pounded the left side of the chest with his fist and in general manifested more theatricals than seemed consistent with an anginal attack. On auscultation a very peculiar sound was heard over the entire chest. This can best be described as a tick-tock with a 3 to 1 or 4 to 1 ratio to the heart beat. This tick-tock sound was of unequal intensity throughout the chest, being louder toward the lung bases. The patient breathed rather irregularly with periods of apnea. A regular, rapid, oscillating movement of the entire thorax was thought to have been seen by some, not confirmed by others. An electrocardiogram was taken at this time which showed a heart rate of about 60 per minute with a normal curve. Several subsequent electrocardiograms were normal. The patient was given amyl nitrite, which did not relieve the symptoms. He was then given one-fourth grain (0.016 Gm.) of morphine but continued to have attacks of pain throughout the day. A chest plate was negative. Barium sulfate showed nothing in the esophagus nor any obstruction or spasm. May 23, under the fluoroscope, it was found that both diaphragms were moving up and down rapidly and regularly and that this rapid motion was synchronous with the sounds previously described, and a diagnosis of diaphragmatic flutter was made. This was confirmed May 26, although the condition was not so pronounced at that time. The rectal temperature ranged from 99 to 103.8 F. (with the exception of two periods of hyperpyrexia to be mentioned later) with wide daily variations, but the pulse was above 100 only on one observation and it averaged from 50 to 64.

Laboratory examinations were unusual only in that the hemoglobin was 15 Gm. and the red cell count was 4,290,000, a finding not consistent with continued residence at an altitude of over 12,000 feet. The white cell count was not significant. The sedimentation rate at one-half hour was 6 per cent, at one hour 15 per cent. The blood Wassermann reaction was negative. A blood culture was negative. Agglutination was negative for B. proteus and the paratyphoid bacillus. The spinal fluid pressure was 325 mm., the cell count 2 small lymphocytes. A section of a portion of the left sternocleidomastoid failed to show trichinae.

During the succeeding days he complained of pain in varying degrees for which he was given opiates. During none of the attacks was there any color change or evidence of circulatory disturbance of any type. When opiates were denied him he became irascible and demanded release. In spite of objective evidence of diaphragmatic flutter it was evident that this did not explain the entire clinical picture and from this time on he was largely controlled with barbiturates.

An attempt was made to control the flutter with carbon dioxide and oxygen inhalation: 10 per cent carbon dioxide with 90 per cent oxygen was employed. Without carbon dioxide the oscillatory movement was 140 and the heart rate 64; with carbon dioxide, after one minute, the heart rate was 69 and the respiration regular. After the patient had received carbon dioxide and oxygen for about four minutes he reverted back to the former type of oscillatory respiration. Subsequent observations showed that the spasmodic movements were inconstant and suggest that the apparent effect of carbon dioxide and oxygen may have been coincidental. Later the left phrenic nerve was injected with 2 per cent solution of procaine hydrochloride. This caused very severe pain for about one minute, after which all the patient's pain was entirely relieved, the tick-tock sound stopped, and the breathing became normal and regular. For two days he did not complain of pain and there was no evidence of flutter. On the second morning after the procaine injection he was presented in the clinical amphitheater before a group of students. While there he sneezed and the flutter returned, at which time a bilateral flickering motion was easily seen and felt over the lower five intercostal spaces. Another possible etiologic factor in this attack may have been irritation at a remark of one of us to the effect that he was not very cooperative, since he was being presented in the hope that the flutter could be demonstrated. During this attack and during many subsequent attacks the flutter was transient, appearing at intervals of approximately forty seconds and lasting from four to seven seconds. Kymograph records to be discussed later were taken at this time. Recurring pain and flutter prompted reinjection of the left phrenic nerve. This gave relief for only a few hours. Injection of the right phrenic nerve likewise led to only temporary cessation of flutter and pain.

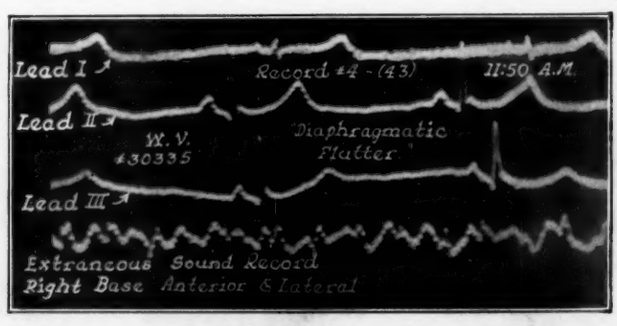

Fig. 3.—Electrocardiogram and sound record of extraneous respiratory sounds.

June 3 under sodium amytal and local anesthesia a left phrenicotomy was done followed by immediate cessation of the flutter. Resection was not attempted because of possible permanent effects.

The following day at 4 a. m. the temperature was reported as 112 F. This was checked by rectum, mouth and axilla with a nurse and a physician constantly in the room. At 8 a. m. the rectal temperature was 102 F. On the following day at 8 p. m. a temperature of 109.8 F. was observed. On this occasion especial precautions as to accurate thermometers and care that there should be no opportunity for malingering were observed. Several physicians and nurses were constantly with the patient at this time. If there was malingering it could not be demonstrated. To exclude a brain lesion as a cause for this hyperpyrexia, a roentgenogram of the skull was taken and showed no evidence of a pathologic condition. Later a request for an encephalogram to rule out further any brain disorder was refused.

About twenty-four hours after the left phrenicotomy, pain and flutter recurred, the flutter being visible throughout the entire chest at a rate of 100 per minute. Two days later the right phrenic nerve was crushed but no resection was attempted. This was followed by cessation of flutter for three days, when he again complained of violent pain. Flutter was not demonstrable as previously but, because of lack of cooperation on the part of the patient, fluoroscopy or kymographic tracings were not attempted; but it was believed that transient flutter was present.

Records of the adventitious respiratory sounds heard over the chest were made on several occasions by means of a cathode ray oscillograph and microphone. The first record (fig. 2) shows the character of the waves obtained on placing the microphone over the right base, anterolaterally. The records were taken successively. In the second record one sees how the sound record is modified by a respiratory movement. The other more regular waves were produced by the flutter of the diaphragm and possibly also the intercostals.

Figure 3 shows the three leads of the electrocardiogram, taken successively. These records show essentially a normal electrocardiogram. The lowest tracing is a record of the extraneous sounds taken from the right base, anterolaterally. It may be seen that these have a more rapid rate than the heart and could therefore not be circulatory in origin, since the rate of the extraneous sounds was about 200 per minute and the pulse rate was 74 per minute.

Figure 4 shows sound records made by placing the microphone over the mitral and tricuspid areas. Two places are marked where a heart tone could be identified. The other waves were produced by the flutter of the diaphragm and possibly also by the intercostals. The lowest curve of the record was obtained by placing the microphone over the right base at the anterior axillary line. The rate of flutter at this time was about 180 per minute.

Figure 5 is from a kymograph record obtained by placing a blood pressure cuff over the lower part of the thorax and fastening it on with a bandage. The bag was then slightly inflated and the rubber tube leading from the bag was connected to a tambour. The writing point of this was made to write on a revolving smoked drum. This record was made in the afternoon of the day on which procaine was injected in the region of the left phrenic nerve. The record shows considerable irregularity in the respiration, but the rate is too slow for "flutter." There is a tendency for the respiration to be Cheyne-Stokes in type during sleep (induced by barbiturate).

COMMENT

Much difference of opinion exists concerning the innervation of the diaphragm. Recently Strauss [2] studied the distribution of the phrenic nerves to the diaphragm in numerous animals and in man. He found a great deal of similarity in distribution in the different species. Fibers from one phrenic nerve were never observed to supply the opposite half of the diaphragm. The intercostals were never found to supply the diaphragm in any of the mammals studied or in man. He concluded that, with the exception of birds, all the animals studied possess the phrenic nerve as the only motor nerve to the diaphragm. Observations here and at California would suggest that in this patient either an accessory phrenic nerve supply existed or that a portion of the flutter may have been due to clonic contractions of the lower intercostals.

Besides the diaphragmatic flutter observed in this patient, the next most remarkable and puzzling symptom was the transient hyperpyrexia.[3] In considering the cause of the high fever we thought that hypothalamic involvement should be considered, but nothing in our

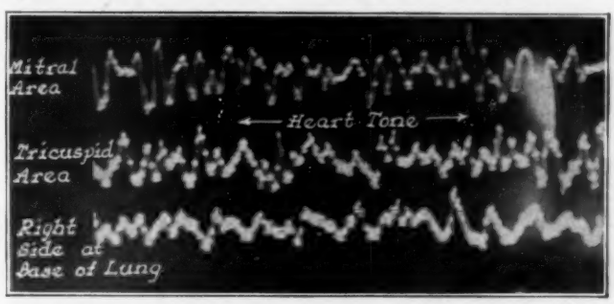

Fig. 4.—Adventitious respiratory sounds and heart tones, May 25, 11:40 a. m.

studies confirmed this idea. However, certain clinical and experimental observations [4] indicate that extreme degrees of alteration in the temperature control may result from lesions in the hypothalamus. A further important observation in this case may be correlated with work of an experimental nature involving the hypothalamus. It has been shown in animals that a state of "sham" rage occurs following the production of lesions in the hypothalamic region.[5] In animals so operated on, slight disturbances, such as by moving or by making noises in the vicinity, lead to all the manifestations of rage. It has been noted previously that our patient was very irascible and certain attacks of flutter appeared to be associated with emotional upsets. We regard it as distinctly possible that the emotional upsets and the hyperpyrexia may point to a lesion of the midbrain in this man. For confirmation of this of course a pathologic examination of the midbrain would be required. In retrospect, we regret that we did not perform tests designed to determine the stability of the vasomotor control, such as the response of the blood pressure to exposure to cold.[6] Likewise cutaneous temperature observations would have been valuable.

The ultimate diagnosis arrived at in this case as one of hysteria in a psychopathic inferior individual seems justified and was made only after numerous clinical consultations had failed to reveal the existence of a

2. Strauss, L. H.: Beitrag zur motorischen Innervation des Zwerchfelles Beim Menschen und bei Tieren, Ztschr. f. d. ges. exper. Med. **86:** 244 (Feb.) 1933.

3. In a letter from Dr. W. B. Porter of Richmond we are advised that he noted a temperature of 105 F., which he attributed to pulmonary infection.

4. Keller, A. D., and Hare, W. K.: Proc. Soc. Exper. Biol. & Med. **29:** 1069 (June) 1932. Davison, Charles, and Selby, N. E.: Hypothermia in Cases of Hypothalamic Lesions, Arch. Neurol. & Psychiat. **33:** 570 (March) 1935. Bazett, H. C.; Alpers, B. J., and Erb, W. H.: Hypothalamus and Temperature Control, ibid. **30:** 728 (Oct.) 1933.

5. Bard, P. A.: Diencephalic Mechanism for Expression of Rage with Special Reference to the Sympathetic Nervous System, Am. J. Physiol. **84:** 490 (April) 1928.

6. Brown, G. E.: Clinical Tests of Function of the Autonomic Nervous System, J. A. M. A. **106:** 353 (Feb. 1) 1936.

demonstrable neurologic lesion. The diagnosis of hysteria seems to fit in well with the transient nature of the diaphragmatic flutter and the fact that the temperature would reach such extreme degrees at times. It is not uncommon for hysteria to be associated with hyperpyrexia, and the literature contains reports of alterations of diaphragmatic function in this disorder.[7] Other functional nervous system disorders, such as epilepsy, may be associated with modifications in the contractions of the diaphragm.

This case is of further interest from the diagnostic standpoint. At first sight the patient presented somewhat typical symptoms of angina pectoris, which condition was definitely ruled out by clinical, electrocardiographic and fluoroscopic observations.

A point of some social interest is the conflicting statements made by the patient regarding his past history. A rather extensive inquiry established the fact that he had been treated in various hospitals, in several states and under different names, but for the same clinical syndrome. Data and fingerprints submitted to the U. S. Department of Justice resulted in a report from this department that the patient had already been traced to four different localities under four different names. He subsequently was admitted to Dr. Kerr's service in San Francisco under a sixth name. In these days, in which the cost of indigent medical care is being given much thought, it would be interesting to know what was the combined costs of care in the more than seven institutions which had received this patient within the period of about one year. If to this figure is added the estimated cost of the services of the various physicians who served gratuitously, there would seem to be some argument in favor of some form of registration of our transient population.

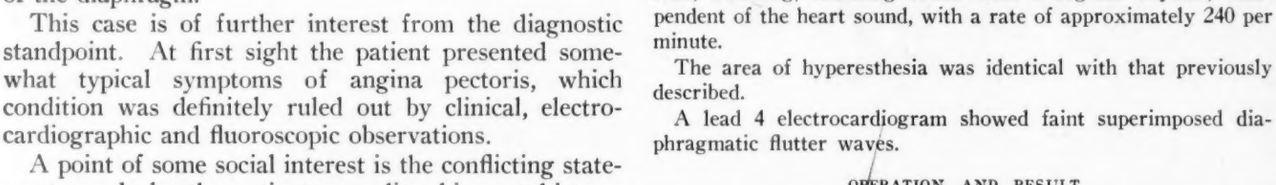

Fig. 5.—Respiration record, May 26, 10:45 a. m., after left phrenic nerve was injected with procaine hydrochloride.

SUMMARY OF REPORT SUBMITTED FROM SERVICE OF DR. WILLIAM J. KERR, UNIVERSITY OF CALIFORNIA HOSPITAL, BY DR. JOHN B. LAGEN

This patient[8] was admitted to the hospital Jan. 28, 1937, under the name of Thomas Dawson, aged 67. The complaint was severe precordial pain of eight months' duration. He claimed perfect health until May 1936, when in his duties as a Texas deputy sheriff while chasing a bandit he was suddenly stricken with severe pain over the heart. The type of pain and its radiation were essentially as previously stated. He described his care in the University of Colorado Hospital and admitted great relief from pain and stated that he had returned to his duties as deputy sheriff, being troubled only by dyspnea. At the end of this time while again "bandit chasing" he had a recurrence of the pain. (Records show that he was hospitalized twice elsewhere for the same complaint.) All observers in many conferences noted that it was difficult to keep him from "chasing bandits" and make him stick to facts.

CLINICAL OBSERVATIONS[9]

Healed supraclavicular fossae phrenicectomy scars were observed. The peculiar sound was heard over the lower part of the chest, especially on the left. It was described as a rather loud, swishing, churning sound with a regular rhythm, independent of the heart sound, with a rate of approximately 240 per minute.

The area of hyperesthesia was identical with that previously described.

A lead 4 electrocardiogram showed faint superimposed diaphragmatic flutter waves.

OPERATION AND RESULT

Feb. 4, 1937, the left phrenic nerve was exposed under local anesthesia. The incision was made across the previous operative scar, and beneath the clavicular head of the sternomastoid muscle was found a resistant mass of scarred areolar tissue and muscular fascia. Beneath this the nerve was found in its usual position traversing the scalenus and was normal in appearance except for a small scarred area at one point in the nerve sheath. The phrenic nerve was then retracted on two silk ligatures and a weak faradic current was applied directly to the nerve trunk by means of the usual electrode. During the course of the operation to this point the patient had been complaining bitterly of discomfort in general and his usual chest pain in particular. He was difficult to restrain and kept demanding that the operation, to which he had willingly agreed, now be immediately discontinued. The respirations were slow and of the deep, gasping type; the diaphragmatic flutter was audible as before.

On the application of the faradic stimulus the patient uttered a sharp cry, gave a jerk, twisted onto his right side in spite of restraint and then vomited.

In a minute or two he relaxed and there was a remarkable improvement in his demeanor. He stated that immediately following the electrical shock, which he felt travel down to his abdomen, there was complete cessation of his chest pain and discomfort. No flutter sounds could be heard on auscultation of the chest or abdomen. The patient was now moved to the x-ray department, and fluoroscopy revealed a slight paradoxical motion of the left leaf of the diaphragm with respiration. Flutter was not visible. There was a weak, undulating flutter through the right leaf of the diaphragm. Under the fluoroscope, faradic stimulation was again applied to the exposed left phrenic nerve, which caused a sharp, downward descent of the left leaf of the diaphragm. The patient was returned to the surgery, where the left phrenic nerve was infiltrated with procaine and avulsed, about 31 cm. being obtained.

7. Gill, W. Gordon, and McArdle, M. J.: Two Cases of Pseudo-Tympanites Caused by Hysterical Spasm of the Diaphragm, Guy's Hosp. Rep. **84**: 94 (Jan.) 1934.

8. Photographic comparisons prove the identity of the patient.

9. Clinical and laboratory observations made in California are given which are at variance with the preceding report. In addition, certain observations are included for emphasis.

The usual skin closure was made. The patient returned to the ward in good condition.

After the operation the patient had no further attacks of precordial pain; his respirations were normal in character with a rate of 20 per minute and no flutter sounds could be heard over the chest. The alteration in his general behavior was striking. He became alert, pleasant and cooperative. However, if too closely questioned concerning his past he still took refuge in fanciful stories.

All temperature observations were rectal. The preoperative temperatures reached daily from 100.8 to 104.3 F. Postoperative temperatures of 107, 103.8 and 102.9 F. were observed, not accompanied by proportional pulse or respiratory rate increase. At first these were not considered due to malingering but subsequently it was the opinion of the California observers that these temperature elevations were due to malingering.

The electrocardiogram after operation showed slightly improved R wave voltage and no diaphragmatic flutter waves. Chest fluoroscopy showed the left diaphragm immobile, high and relaxed, the right normal and without any evidence of flutter.

On the twelfth postoperative day the patient awakened at 2 a. m. complaining of typical precordial pain with left arm distribution. No flutter sound was audible. Because of pain he claimed inability to use the muscles of the left arm; by midafternoon he presented the picture of a left-sided hemiplegia involving the arm and leg but with the neurologic observations of malingering. On the following day he was seen to use both arm and leg when unconscious of observation. On the thirteenth postoperative day he again complained of severe precordial pain, also extending over the right lower part of the chest anteriorly. At this time the flutter-murmur was heard over the right lower part of the chest anteriorly and posteriorly and fluoroscopy revealed flutter of the right diaphragm.

Temporary relief from flutter was obtained by faradic stimulation over the right phrenic nerve through the skin, and response to carbon dioxide inhalations was as in the Denver observations. Avertin with amylene hydrate anesthesia also caused cessation of the flutter.

February 25, under local anesthesia, the right phrenic nerve was exposed through the previous scar. Beneath the area of the old scar were found remnants of a previously crushed phrenic nerve which were frayed out, separated and presented themselves as fine filaments scattered throughout the scar tissue. Only two fibers of the nerve could be definitely isolated, and these were sectioned. No specimens were taken. The patient was returned to the ward in good condition.

Just before the patient was taken to surgery, no flutter sounds could be heard over the right side of the chest. After return from surgery, repeated auscultation revealed no evidence of flutter. By February 28 the patient had become so unruly and so difficult to manage that he was permitted to sign a release slip and leave the hospital. On discharge of the patient there was no evidence of diaphragmatic flutter or of hemiplegia of the left side. The patient ostensibly left for Los Angeles, still having in his pocket an unused bus ticket for that destination.

March 6, 1937, a letter was received from the Ventura County Hospital stating that a patient named Timothy Dawson was admitted on the evening of March 3 complaining of severe pain over his heart and severe dyspnea. He stated that he had been in the University of California Hospital, where an operation was done. The patient had been found lying beside the road near Piru, Calif. At the time of entry the patient was found to have a recurrence of his diaphragmatic flutter. He was given morphine and felt quite well by the next morning. He remained five days in the hospital without recurrence of the flutter, then signed a release and left. One day later he was again brought in, this time with what was apparently a hysterical hemiplegia, which cleared rapidly. Ventura County Hospital authorities further stated that their social service department discovered that the correct name of the patient was Walter Urwiler and verified his residence in Tucson, Ariz. He was sent to Tucson on the train, March 11, 1937.

FRACTURE OF THE SHAFT OF THE ULNA

WITH DISLOCATION OF THE HEAD OF THE RADIUS

GEORGE HALSEY HUNT, M.D.
Passed Assistant Surgeon, U. S. Public Health Service
SEATTLE, WASH.

When the ulna is fractured, what happens to the radius? Usually it is fractured also, but if not, what then? Almost invariably in the case of indirect violence, and frequently in the case of direct violence, if the radius is not fractured, the radial head is dislocated. Unless one is specifically looking for it (and particularly if the elbow joint is not included in the roentgenogram) a dislocated radial head can easily be overlooked until the patient's continuing disability two or three months later forces a readjustment of the surgeon's complacency that "only the ulna was fractured."

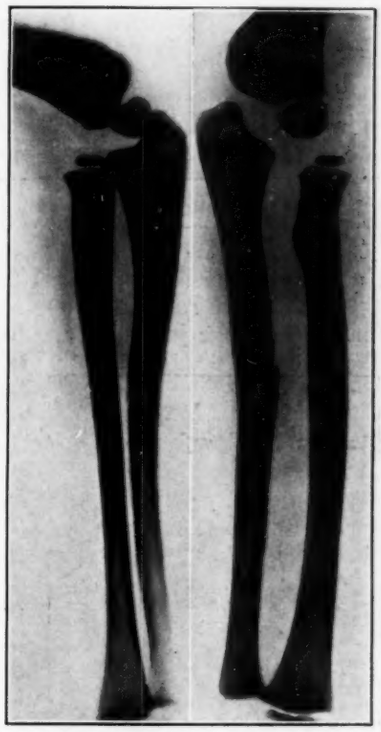

Fig. 1 (case 1).—Right elbow before reduction. The dislocation of the radial head can be clearly seen.

The dislocation of the radial head is overlooked largely because most physicians have not been trained to look for it. The ulnar fracture is frequently 3 or 4 inches (7.6 or 10 cm.) below the elbow; attention is immediately centered on the obvious lesion, and unless one's first reaction on seeing a fracture of the ulna is to find something amiss with the radius a dislocated radial head may or may not be discovered. Careful physical examination will usually discover the true situation, as the radial head is almost always palpable anterior to the lower end of the humerus, with a hollow over its normal location. Rotation of the forearm is painful and usually greatly limited.

For some reason, this combination of fractured ulna and dislocated radial head has not been stressed in the American literature, though it has been recognized for over a century. Two cases were reported by Monteggia in 1814, and almost a hundred years later Perrin [1] honored this early report by suggesting that the condition be called "Monteggia's fracture." This term is today universally used in the Continental literature. Possibly as a result of the long-distance collaboration

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1. Perrin, Jules: Les fractures de cubitus accompagnées de luxation de l'extrémité supérieure du radius, Thèse de Paris, Paris, G. Steinheil, 1909.

of these two Europeans, the subject is referred to rather frequently in the Continental journals, while its neglect west of the English Channel continues. During the four years 1934-1937, there was only one article in English on the subject listed in the *Quarterly Cumulative Index Medicus*, four pages by Cunningham,[2] while foreign language journals published twelve articles, one of them thirty-eight pages long.

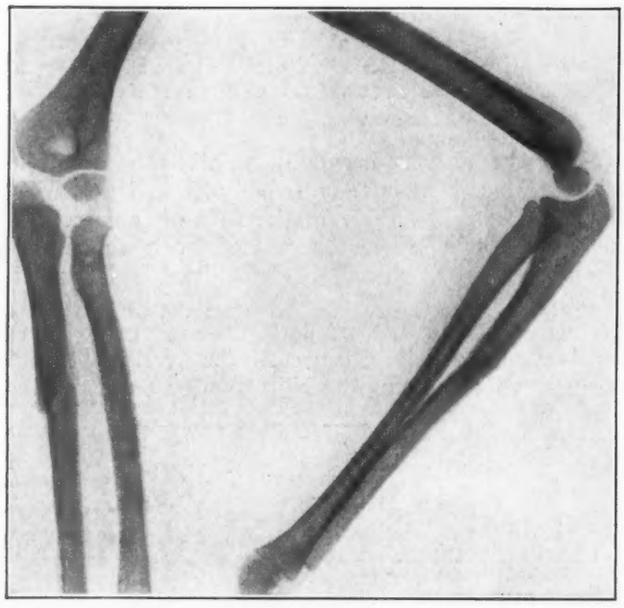


Fig. 2 (case 1).—Right elbow three and one half weeks after reduction. The radial head remains reduced and there is visible healing of the ulnar fracture.

Fig. 3 (case 2).—Left elbow before reduction.

The textbooks of Speed [3] and Wilson and Cochrane [4] mention the lesion and discuss it briefly. My paper, however, is primarily addressed to the general practitioners, who see most of these cases first, for unless the condition is stressed more than it has been in the past a goodly percentage will continue to be missed. As Cunningham concludes, "neglected cases result in great loss of function and much deformity."

The cases are not as rare as their literary neglect would lead one to believe. Cunningham[2] had fourteen cases in a series of 257 consecutive fractures of the ulna, excluding fractures of the olecranon and styloid process. In other words, more than 5.4 per cent of all his fractures of the shaft of the ulna were accompanied by dislocation of the radial head.

2. Cunningham, S. R.: Fracture of the Ulna with Dislocation of the Head of the Radius, J. Bone & Joint Surg. **16**: 351-354 (April) 1934.
3. Speed, Kellogg: A Textbook of Fractures and Dislocations, ed. 3, Philadelphia, Lea & Febiger, 1935, p. 462.
4. Wilson, P. D., and Cochrane, W. A.: Fractures and Dislocations, Philadelphia, J. B. Lippincott Company, 1925, p. 222.

Granted that an orthopedic or fracture specialist will have a higher percentage of complicated cases, the fact remains that this particular injury is common enough to warrant more attention than it has had. Of the cases reported in this paper, the first two were admitted to a 200 bed general hospital within six days of each other.

It may be in order to review briefly the reasons why fracture of the ulna by indirect violence is almost always accompanied by some injury to the radius. The basic reason is that the radius and ulna form mutual splints, each bound to the other at top and bottom by strong ligaments and attached almost throughout their full lengths by the strong interosseous membrane. As a consequence, it is difficult for any indirect violence to put enough stress on one of the members of this team to fracture it without previously or simultaneously blocking the other member out of the play. Usually, of course, there is no subtlety about the matter—both bones are broken—but occasionally the splinting and strengthening power of the radius is circumvented by the neat trick of knocking out the supporting prop. With the elbow in full extension, a sudden thrust upward through the radius tends to force it forward off the capitellum, and if the force is strong enough it will sometimes rupture the annular or orbicular ligament that surrounds the radial head and binds it to the ulna, thus allowing the head to slip forward and upward while its ulnar fellow is being fractured.

Fig. 4 (case 2).—Left elbow on Nov. 27, 1935, three months after reduction. Radial head in normal position. Very slight healing of the ulna.

For all practical purposes, injury to the ulna by indirect violence means injury to the radius also. Recognition of this not uncommon combined lesion is the sine qua non of its treatment, and its recognition often depends largely or entirely on the instinctive asking of the question "what is wrong with the other bone?"

In the case of direct violence, it is of course possible to fracture either radius or ulna without grossly damaging the other, but here, too, Monteggia's lesion must be kept in mind for, according to both Cunningham [2] and Wilson and Cochrane,[4] the commonest cause of the injury is a direct blow against the extensor surface of the forearm near the junction of the middle and upper thirds of the ulna. In this type of injury, the force first fractures the prominent ulna and then, if strong enough, carries forward against the radius, whereupon a triangular battle develops among the force, the bone and the annular ligament. The ligament fre-

quently proves weakest, tears and allows the head of the radius to slip forward and upward. A similar but reversed injury, with posterior dislocation of the radial head, has been reported but is rare.[5]

Once one's attention has been drawn to the region of the elbow, there is seldom any difficulty in recognizing the dislocation of the radial head. It is perfectly obvious if only one looks for it. It may be thought that in children with cartilaginous epiphyses, in whom these injuries occasionally occur, the lack of shadow at the upper end of the radius might offer serious diagnostic difficulty, but solution of this problem is simple if one keeps in mind the fact that the undamaged radius, no matter how little it may be ossified, will always point directly at the capitellum. Roentgenograms in two planes, therefore, will give the answer. If the radial diaphysis points toward the capitellum in both pictures, well and good; but if in either one of them it is pointing somewhere else than directly at the capitellum the epiphysis of the radial head is either dislocated or separated. This point is illustrated in case 1, in which the difference between the prereduction and postreduction appearance of the upper end of the radius is clearly seen (figs. 1 and 2).

Once the diagnosis has been made, what of treatment? These may be difficult fractures to treat, and the best orthopedic or fracture specialist available may well be consulted at the beginning rather than after several weeks of unavailing puttering. The difficulty is twofold: first, that closed reduction of the dislocated radial head involves insinuating it into place between the torn ends of the ruptured annular ligament and, second, that if the radius is reduced the forearm is restored to its normal length, whereupon it becomes something of an expert's job to get the ends of the ulna into apposition so that healing rather than nonunion will result. The first consideration, that is, reduction of the dislocated radial head, is often impossible without an open operation, and even if closed reduction is apparently obtained the forearm should be cautiously extended after from ten to fourteen days to see whether reduction is real or illusory. If the latter, the radial head will pop forward as soon as the forearm is extended, which means open operation, and the sooner the better. It is easy to see that an attempt to reduce the radial head might easily (and usually does) simply push the head back against the annular ligament, whereas for restoration of normal function the head must be encircled by the ligament.

If operation becomes necessary, the radial head should be replaced in its normal position and the torn ends of the annular ligament sutured together over it. Speed[3] suggests that "early operation with resection of the head in adults gives fairly satisfactory results," but this operation is probably indicated only if anatomic replacement is impossible.

As to the possibility of ulnar nonunion, nothing hard and fast can be laid down. The ulna is a notorious site of nonunion and many cases of the injury under consideration develop this complication. At least it may be said that it is better to have an ulnar nonunion with the radius restored to normal than to leave the patient with a dislocated radial head and no guarantee of ulnar healing. If operation to replace the radial head becomes necessary, as it often does, internal fixation of the ulna may be advisable.

5. Cioran, S., and Sima, C.: Monteggia Fracture with Posterior Dislocation of the Radius; Rare Case, Rev. san. mil., Bucuresti **32**: 622-624 (Dec.) 1933.

Late operations in neglected cases must be adjusted to the conditions present. In case 3 of the present series, which was first seen two and one-half months after injury, it was necessary to resect the radial head and perform a bone graft on the ununited ulna. In this case a procedure was used which has been found to be of value in certain cases of bone grafting and which will be the subject of a future report by Dr. Roger Anderson. After the graft had been fixed in place, Roger Anderson half-pins were inserted into the ulna above and below the graft and the projecting portions were incorporated into the plaster cast in order to effect complete immobilization of the fragments and graft. Use of this technic permitted the use of a short cast, reaching only to the upper third of the arm, with shoulder motion instituted immediately after operation and with excellent healing of the graft.

One final word concerns the radial nerve. In these, as in all fractures, the presence or absence of damage to the nerve should be ascertained before any treatment is undertaken. The deep radial nerve, the motor terminal branch of the radial nerve, passes in front of the lateral part of the elbow joint just where it can be easily injured by a dislocated radial head, and it is better to discover injury to this important nerve before rather than after manipulation or operation. Prompt reduction of the dislocation is usually the only treatment that a bruised radial nerve needs, but operation may be necessary to free it without adding to the injury if the radial head has come into particularly intimate contact with it.

CONCLUSIONS

1. Fracture of the ulna with associated dislocation of the head of the radius, the so-called Monteggia fracture, is a relatively common lesion.

2. The dislocation may be easily overlooked unless one is on the watch for it. In the presence of an ulnar fracture one should instinctively ask "what is wrong with the radius?"

3. If neglected, the injury will usually result in severe disability.

4. Treatment should be prompt. An attempt at closed reduction is permissible only if one realizes that apparent reduction of the radial head, with the forearm flexed, may be illusory and one takes precautions to make sure within a few days that the reduction is real. In these cases, the best specialist available may be cheapest.

REPORT OF CASES

Cases 1 and 2 are reported with the permission of Dr. Harry B. Slocum, chief of staff, Monmouth Memorial Hospital, Long Branch, N. J.

CASE 1.—R. P., a white boy aged 6 years, admitted to the Monmouth Memorial Hospital Aug. 16, 1935, had fallen on the right arm. The forearm and elbow were tender, and any motion of the elbow caused pain. Roentgen examination showed a greenstick fracture of the middle third of the ulna, with slight bowing to the palmar surface and toward the radius, as well as forward and lateral dislocation of the radial head.

Closed reduction of the fracture and dislocation was done under nitrous oxide anesthesia, and a posterior molded plaster splint was applied to hold the forearm flexed to an angle of 45 degrees.

Immediate postreduction roentgenograms showed apparent anatomic replacement of the radial head.

September 3 the splint was removed and the forearm was cautiously extended to 135 degrees without causing displacement of the radial head. Thereafter the splint was removed daily for guarded active motion. At the time of his discharge from the hospital, September 11, he had almost complete extension of the forearm.

Roentgen examination September 10 showed the radial head to be in good position with definite callous formation around the ulnar fracture.

CASE 2.—E. S., a Negro aged 51, admitted to the Monmouth Memorial Hospital Aug. 22, 1935, was struck across the left forearm with a stick during a fight. The left forearm was tender and deformed, with palpable dislocation of the radial head. Roentgen examination showed a comminuted fracture of the ulna, with a triangular loose fragment, and with dislocation of the head of the radius.

The fracture-dislocation was reduced by manual traction and manipulation and a sugar-tongs plaster splint applied with the forearm flexed to less than 90 degrees. Roentgenograms August 24 showed apparent reduction of the dislocation, with the fragments of the ulna in fair alinement, though not in contact.

On September 13 the forearm was cautiously extended, without recurrence of the dislocation. Roentgenograms at this time showed no callus around the ulnar fragments. On October 8, faint callus was visible.

Beginning October 24, the splint was removed for physical therapy but was reapplied after each treatment. Roentgen examinations on November 8 and 27 showed that the radial head was remaining in normal position but showed little increase in callus.

The Wassermann reaction of the blood was positive, and he received antisyphilitic treatment during his stay in the hospital.

He was discharged from the hospital December 10, still wearing a splint, and was almost immediately lost sight of, as he moved to the South. Whatever the utlimate outcome of the ulnar fracture, the radial head was still in normal position almost four months after his injury.

CASE 3.—R. D. A., a white man aged 63, was admitted to the U. S. Marine Hospital, Seattle, on March 16, 1937. Dec. 31, 1936, two and one-half months before admission, he was struck on the left forearm near the elbow by a piece of a stump that he was helping to blast out. The forearm was painful and useless and he was taken to a local physician, who manipulated his arm and applied a plaster cast, which was left on for five weeks and then replaced by another cast, which was left on until the latter part of February. After removal of the cast the elbow was stiff. The same physician manipulated it under anesthesia without benefit.

Examination, March 16, showed the left elbow to be enlarged and irregular. Elbow motion was from 90 to 135 degrees, with practically no rotation. The radial head was palpably dislocated forward and upward, lying in front of the lower end of the humerus. There was moderate atrophy of the muscles of the forearm and hand.

Roentgen examination March 16 showed a comminuted fracture in the proximal third of the ulna with some radial angulation at the site of fracture and no definite repair. The head of the radius was dislocated anteriorly.

The patient was treated with physical therapy for two months and then, as definite nonunion of the ulna was present, was operated on by Dr. Roger Anderson. The radial head was resected and an osteoperiosteal onlay graft from the right tibia was fixed to the ulna after the bone ends had been freshened. Roger Anderson half-pins were inserted into the upper and lower fragments of the ulna through the skin and were incorporated into the plaster cast, which was applied from the hand to the upper third of the arm.

The postoperative course was uneventful except for temporary tourniquet paralysis of the muscles of the left forearm and hand. August 18, the cast, pins and sutures were removed. Both operative wounds were well healed. Roentgenograms at this time showed incomplete bony union. A posterior molded plaster splint was applied which was removed two or three times a day for active motion and which was left off altogether except at night by September 1. He was discharged from the hospital September 7, with elbow motion of from 80 to 135 degrees, with slight rotation. He was seen again October 26, when he was found to have a range of elbow motion of from 60 to 150 degrees. Roentgenograms at this time showed complete bony union of the grafted ulna.

U. S. Marine Hospital.

THE TREATMENT OF EPILEPSY WITH SODIUM DIPHENYL HYDANTOINATE

O. P. KIMBALL, M.D.
CLEVELAND

During the first five months of 1938 a study was made of the treatment with sodium diphenyl hydantoinate (dilantin) of epileptic persons in the public schools of Detroit, where the Special School for Epilepsy had been established as an integral part of the public school system. This drug was considered the most powerful anticonvulsant drug that had been tried, and further use has only strengthened this belief. In view of the toxic effects, I felt that it should not be used except under the careful guidance of a physician.

Regarding the efficacy of sodium diphenyl hydantoinate in the control of seizures, recent observations correspond very closely with those of the aforementioned study and the study of Putnam and Merritt.[1] In twenty-three of the 152 cases under observation the drug has been used for less than three months. Of the remaining 129, the seizures have been entirely controlled in eighty-one, or 62.7 per cent, and definitely

Advanced hyperplasia of the gums.

alleviated in nineteen, or 14.7 per cent, and little or no benefit has been noted in twenty-nine cases, or 22.5 per cent. I wish to emphasize the fact that the general health, the mental state and the personality of the patient are so much better than before the use of sodium diphenyl hydantoinate that the treatment will be continued even though I am reporting some difficulties in this paper.

The development of a sore mouth in some cases in addition to dizziness and a staggering gait was noted, but these two conditions had not been associated. On further observation it was found that some patients had definite hyperplasia of the gums, and occasionally the hyperplasia had developed to such a degree that it suggested scurvy.

Of the 152 patients receiving sodium diphenyl hydantoinate, the majority of whom attend the Special School for Epilepsy, 119 have been reexamined for hyperplasia of the gums, and it is this condition which is emphasized in this report. The gums of fifty-one are normal and of sixty-eight show varying degrees

Dr. E. E. Ecker and Dr. Louis Pillemer made the determination of ascorbic acid in the cases discussed.

1. Merritt, H. Houston, and Putnam, Tracy J.: Sodium Diphenyl Hydantoinate in the Treatment of Convulsive Disorders, J. A. M. A. **111:** 1068 (Sept. 17) 1938.

of hyperplasia. Seventeen patients have advanced hyperplasia like that shown in the accompanying illustration. As a matter of record fifty-seven per cent of the patients who have used this drug two months or more show changes in the gums to some degree. Some patients who have taken it continuously for eleven months show no change; others, who have taken it for as short a period as two months and in smaller doses, show definite hyperplasia associated with vitamin C deficiency. Some had a sore mouth and tender gums for a short period starting about two weeks after the beginning of therapy. The soreness cleared up and no further thought was given to this condition until the progressive hyperplasia was noted. In only four cases is the advanced hyperplasia associated with soreness and petechial hemorrhages on pressure, and in each of these there is an associated gingivitis. No patient who has employed good oral hygiene has any suggestion of sponginess or bleeding. The others show a smooth firm hyperplasia that does not bleed easily and is not particularly tender. Forty of the sixty-eight patients who show this peculiar hyperplasia of the gums have or have had dizziness associated with an unsteady swaying gait and spells of unusual weakness.

Ascorbic Acid Content of the Blood Serum

Group	Mg. per 100 Cc.
Normal	1.14
One plus	0.58
Two plus	0.55
Three plus	0.47

Beginning August 15, ascorbic acid was prescribed for one patient. With 300 mg. daily the condition of the gums was only slightly improved in three weeks. The use of a diet high in vitamin C was continued, yet on October 25 an analysis of the blood serum showed the ascorbic acid level to be 0.1 mg. per hundred cubic centimeters, which is about one tenth of normal. Because of this unusual observation, similar studies were made on thirty-four children in the Special School for Epilepsy. Those showing definite beginning hyperplasia were designated one plus, those with rather advanced hyperplasia two plus and those with extreme hyperplasia, as seen in the illustration, three plus. A group showing no changes in the gums was included. The physical condition of the patient was not known to the serologist at the time the blood studies were made. The amount of ascorbic acid found in the blood serum of these groups is indicated in the accompanying table, the amount given being the average for each group of eight patients.

No patient with normal gums showed a deficiency in ascorbic acid and, conversely, every patient with marked hyperplasia of the gums showed a definite deficiency of vitamin C. Therefore it is concluded that the deficiency of ascorbic acid parallels the degree of hyperplasia of the gums.

REPORT OF A TYPICAL CASE

A youth aged 18 had suffered from grand mal attacks since the age of 15. May 7, 1938, treatment with 0.4 mg. of sodium diphenyl hydantoinate daily was started, and, although he had averaged eight grand mal seizures a week for the previous two years, he did not have a seizure in six months during which he received this drug. Two weeks after the beginning of treatment he complained of soreness of the gums; this disappeared in about two weeks. By the first of July enlargement of the gums was evident to the patient and to his family. By August 1 it had progressed to such an extent that his dentist advised surgical removal of some of the tissue. Beginning August 15, 300 mg. of ascorbic acid was given daily for three weeks, with very little effect. September 7, use of the excessive amount of ascorbic acid was discontinued but a diet high in vitamin C was substituted. October 25 the ascorbic acid content of the blood serum was 0.1 mg. per hundred cubic centimeters. Also on this date the photograph accompanying this report was taken. Because of the parents' concern over the low vitamin C content, without my knowledge they resumed the treatment with ascorbic acid, 300 mg. daily. November 22 the ascorbic acid content of the blood serum was found to be 1.8 mg. per hundred cubic centimeters, a high normal value. At this date his gums showed some improvement. Because of the striking result in the control of seizures, improvement in the mental state and disposition, treatment with sodium diphenyl hydantoinate, 0.3 Gm. daily, was continued.

The usual symptoms of severe and prolonged vitamin C deficiency (scurvy), such as purpura, sore joints and extreme weakness, have not been seen. In general the patients are in a very satisfactory condition except for the gingival hyperplasia associated with vitamin C deficiency. As to this condition, it is known so far only that (1) there is a definite relationship between the changes in the gums and the low ascorbic acid level (the severity of the hyperplasia appears to parallel the decrease in vitamin C) and that (2) this condition seems to be associated with the treatment with sodium diphenyl hydantoinate.

Further studies are in progress, the results of which will be given in a later report.

940 Hanna Building.

Clinical Notes, Suggestions and New Instruments

HERNIA INTO THE PARADUODENAL FOSSA WITH OBSTRUCTION DUE TO LARGE BILIARY CALCULUS

I. A. ARNOLD, M.D., LOUISVILLE, KY.

Since I reported this case in December 1933, my attention has been called to the reports on paraduodenal hernia by Baumeister and Hanchett.[1] They report only on right paraduodenal hernia and have found but forty-four cases of this particular type of internal hernia. One was the case which I am now reporting. I have been able to find no other case in the literature in which the obstruction in the hernia was due to a large gallstone.

REPORT OF CASE

History.—Mrs. L. F., aged 70, white, was admitted to Norton Infirmary Jan. 29, 1933. Her present illness began seven days before admission to the hospital, immediately following a meal which had made her very sick. The symptoms began with vomiting accompanied by severe pain in the epigastric region which, however, subsided for a period of twenty-four hours, when she began to have intermittent cramps, pain and nausea. This condition lasted for a few hours and then subsided, only to recur on eating, after which she would invariably vomit her food in from one to three or four hours. She became progressively worse and at the time of her admission the vomiting was feculent. From the history obtained, she never at any time suffered the severe pain that one would be supposed to experience from an intestinal obstruction; neither was the distention of the abdomen marked. I was unable to obtain a past history that would tend to have any bearing on the present condition.

From the Surgical Clinic of the Norton Infirmary.

1. Baumeister, Carl, and Hanchett, McMicken: Right Paraduodenal Hernia, Arch. Surg. **37**: 327 (Aug.) 1938.

Examination.—Physical examination revealed arcus senilis, generalized arteriosclerosis, slight cardiac hypertrophy, and a definite systolic murmur at the apex and aortic and pulmonic areas. The second sounds were weak. The blood pressure was 110 systolic, 66 diastolic. Pulmonary congestion was marked. The abdomen was slightly distended and markedly rigid. Peristaltic waves were detected but were not vigorous.

Urinalysis revealed a cloudy appearance, an acid reaction and a specific gravity of 1.020; tests for bile and urobilin were negative.

Microscopic examination revealed numerous squamous epithelial cells, mucous threads, many pus cells and an occasional red blood cell.

A blood count showed 4,530,000 red blood cells, 21,000 white blood cells, hemoglobin content 80 per cent (12 Gm.), color index 9, neutrophils 24 per cent, basophils 1 per cent, monocytes 6 per cent and lymphocytes 3 per cent.

A diagnosis of intestinal obstruction and probably carcinoma was made, and the patient was operated on immediately under spinal anesthesia preceded by one sixth grain (0.01 Gm.) of morphine and 1/200 grain (0.0003 Gm.) of scopolamine hydrobromide.

When the abdomen was opened through a right rectus incision in the upper part of the abdomen there was a pronounced discoloration and slight distention of the small intestine extending from the pylorus downward about 5 feet, where a loop of the intestine went through the opening formed by the ligament of Treitz and was twisted on itself. There was a large mass in the hernia which proved to be a gallstone. After the obstruction had been relieved and the stone had been removed from the small intestine the color gradually returned to the bowel above the obstruction. On examination of the gallbladder region there was found at the junction of the common duct to the duodenum a fibrous band, but no definite gallbladder could be made out. Owing to the desperate condition of the patient no further examination was deemed advisable. The abdomen was closed in the usual manner with four stay sutures.

At the time of the operation 1,000 cc. of 10 per cent dextrose and saline solution was given intravenously; a stomach lavage was also done. At first there was pure feculent matter; the lavage was continued until the fluid returned clear. She was very quiet through the operation; this we later attributed to coma, since she never rallied or regained consciousness.

AUTOPSY

The autopsy was performed by Dr. A. J. Miller. The body was well developed and well nourished. The abdomen was rotund but not distended. In the region of the upper right rectus there was a recent surgical incision.

The stomach was filled with gas and a small amount of fecal liquid and contained four faceted gallstones about 5 mm. in their longest diameter. In the right lateral wall of the second portion of the duodenum was an ulceration entirely through the wall of the duodenum and communicating with the lumen of the gallbladder. The gallbladder was shrunken and fibrous, surrounded by fat tissue. The cavity seemed to be limited to this fistula, which was about 2.5 cm. in diameter. An opening into the cystic duct was not demonstrated. Apparently the fistula between the duodenum and the gallbladder was formed by the erosion of a stone from the gallbladder into the digestive tract. The hepatic tract was patent, as demonstrated by gently milking it and expressing bile into the duodenum. The remainder of the tract was not opened. The duodenum and jejunum were dilated and hemorrhagic for a distance of about 4½ feet. Beyond this point the small bowel was collapsed and the large bowel also was not distended. At this point in the jejunum, about 4½ feet from the duodenum, there was a recent surgical incision opposite the mesenteric attachment. It is reported that a large gallstone was removed from this location and that this loop of the intestine was found at operation to be herniated under the ligament of Trietz. The ligament of Trietz was examined and found to be hemorrhagic, swollen and softened.

The liver was soft, light colored and blotched.

The pancreas contained a few small flecks, evidently the result of old fat necrosis.

The right kidney was light colored and soft but not dimpled.

The pelvic viscera were not remarkable, except for small calcified fibroids attached to the uterus.

In this case the fundus of the gallbladder had anastomosed itself to the duodenum just opposite the ampulla of Vater. An opening was formed by the pressure of a large stone and from the different colors of the ends of the stone it had been partially delivered into the duodenum for some time, as it showed evidence of having been acted on by the gastric juices. During the first siege of vomiting the delivery was completed. The stone passed down into the jejunum for about 5 feet and lodged where a portion of the intestine had gone into the left inferior paraduodenal jejunal fossa. This knuckle with the stone inside was twisted on itself and had gone downward, backward and outward for about 5 inches behind the peritoneum. A large mass could readily be felt posterior to the peritoneum. When the intestine was delivered from the hernial fossa this hard mass proved to be a large biliary stone. The intestine was incised and the stone removed.

It is difficult to describe as well as to demonstrate this hernia so that others may see how it can happen. When the colon and stomach are lifted to show the fossa, the greater portion of it disappears, but with the finger in the fossa and the intestine turned down in its normal position the fossa greatly increases. It is only then that one can visualize how this hernia occurs.

Sherrill, in his book on peritonitis, gives a graphic description of the anatomic conditions of the left duodenojejunal fossa, where these hernias not infrequently occur.

Moynihan [2] describes nine of these rudimentary fossae about the duodenojejunal flexure in which the internal hernia may be found. The most important are the superior and inferior paraduodenal folds and the fossae of Waldeyer and Landzert.

Steinke [3] in my opinion has made the best classification of paraduodenal hernias. He classifies them as right, left and duodenojejunal, superior and inferior. The one under discussion would come under the duodenojejunal inferior.

Hallock [4] presented a specimen of duodenojejunal hernia before the Chicago Surgical Society in 1917, and in his case it was found post mortem that the hernia went upward and backward, but in my case the hernia went downward and backward.

Dowdle [5] reports thirty-four cases of the right and 105 of the left that have been recorded in the literature. Of the thirty-four cases of right paraduodenal hernias, seventeen came to operation and seventeen were found at autopsy. Of the seventeen patients operated on there were six recoveries and eleven deaths. His case made the thirty-fifth reported, the eighteenth to come to operation and the seventh in which recovery occurred.

The latest data that I have been able to find on internal hernia are those of Steinke, quoting Short.[6] To date there have been 203 paraduodenal hernias, including forty-eight in the left duodenojejunal fossa, but in the record of these cases there is not a single case which shows the obstruction in the herniated intestine to be that of a gallstone, as in my case.

SUMMARY

The illness here reported evidently began as cholelithiasis. One of the large stones eroded its way through the gallbladder and duodenum, forming a cholecystoduodenal fistula. This stone became impacted in the jejunum 4½ feet from the duodenum, and this impacted loop became herniated beneath the inferior duodenal fold, resulting in complete obstruction of the small intestine.

The patient's death is attributed to complete obstruction of the jejunum. The small stones were evidently regurgitated from the duodenum into the stomach, having passed through the fistula.

626 Medical Arts Building.

2. Moynihan, B. G. A.: On Retroperitoneal Hernia, New York, William Wood & Co., 1906.
3. Steinke, C. R.: Internal Hernia, Arch. Surg. **25**: 909 (Nov.) 1932.
4. Hallock, Kenneth: Presentation of a Specimen of Duodenojejunal Hernia, Surg., Gynec. & Obst. **26**: 473, 1918.
5. Dowdle, Edward: Right Paraduodenal Hernia, Surg., Gynec. & Obst. **54**: 246 (Feb.) 1932.
6. Short, A. R.: Retroperitoneal Hernia, Brit. J. Surg. **12**: 456 (Jan.) 1925.

PNEUMOCOCCUS TYPE XIV PNEUMONIA IN TWINS; CONTRASTED TREATMENT

JESSE G. M. BULLOWA, M.D., NEW YORK
Visiting Physician, Harlem Hospital and Willard Parker Hospital.

Opportunity to contrast the effect of two methods of therapy in human litter mates (identical twins) is sufficiently unusual to warrant this brief report:

Evelyn H., aged 17 months, had cough and coryza May 6, 1938, and on the following day an elevation of temperature. May 9 the swelling of the eyes and a facial rash appeared and the following day vomiting and fever. May 11 the rash was fading

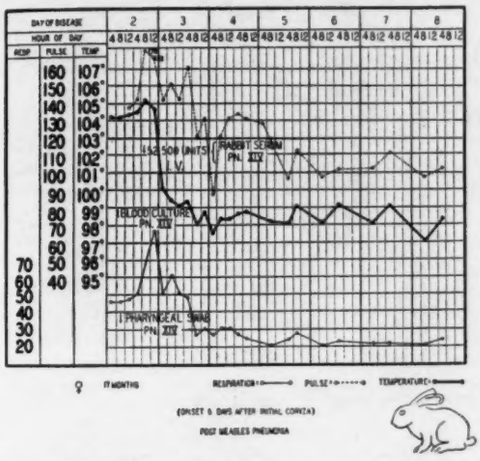


Chart 1.—Course of the twin who received serum therapy promptly.

but a sore throat and some dyspnea developed. She was admitted to Willard Parker Hospital May 12, appearing acutely ill, with an elevation of temperature to 104.2 F., an increased respiratory rate and a faint maculopapular rash on the face and thighs, with macular staining behind the ears. The ear drums were normal, the conjunctivas slightly reddened and the eyelids swollen. The tonsils were large and moderately congested; there were no Koplik spots. The breath sounds were suppressed at the bases of both lungs; there were dulness, diminished voice sound and a few coarse rales at the base of the left lung. There was slight impairment at the base of the right lung posteriorly, with areas of bronchovesicular voice and numerous rales and rhonchi over both pulmonary fields. Hepatic dulness was slightly increased. The child cried constantly during the examination. Two hours after admission pneumococcus type XIV was recovered on a pharyngeal swab. After a negative cutaneous test, 57,000 units of pneumococcus type XIV rabbit serum with 5 minims (0.3 cc.) of epinephrine in 150 cc. of physiologic solution of sodium chloride was introduced into the external jugular vein. Three days later the child was well, although signs at the base of the left lung persisted for ten days after treatment. The blood culture was positive on admission. She was discharged May 31, nineteen days after admission, and has been well since.

Emily H., aged 17 months, who had coryza and a slight cough May 7, 1938, was admitted to Willard Parker Hospital May 12 with fever, a faint maculopapular rash, coryza, cough and conjunctivitis. There were no Koplik spots. The temperature was 101 F., the pulse rate 100 and the respiratory rate 24. The lungs were clear. The fever disappeared the next day; the pulse rate was 118 and the respiratory rate 30 on one occasion. The temperature ranged from 98 to 99 F.; pulse rate was below 100 and the respiratory rate 20 until May 20, at which time she was discharged in good condition. May 23 she was admitted to Harlem Hospital, where her mother stated that the patient had not been well since discharge from Willard Parker Hospital, a severe cough having developed that evening and continued to the next day. May 22 she was feverish and sweated and was restless. On admission there were rales scattered throughout the lungs. On the day after admission to Harlem Hospital, x-ray examination revealed an infiltration extending outward from both hilar regions. Pharyngeal culture yielded pneumococcus type XIV. Emily chanced to fall into the serum control group of type XIV, and accordingly no serum was at first given. Her course in the hospital was a stormy one; there were daily elevations of temperature to between 104 and 105 F. for eight days, with profound prostration and rapid pulse. During this time she deteriorated steadily, losing considerable flesh and strength despite removal to the atmosphere control room (oxygen) and excellent nursing care. On the tenth day of illness the blood culture yielded pneumococcus type XIV. Culture the next day was also positive. Because of the persisting bacteremia, it was decided to administer serum. Accordingly, 164,000 units of homologous rabbit serum was given intramuscularly and 68,250 units intravenously. There was an abrupt drop in temperature (chart 2) and only a slight rise during the subsequent two days, the temperature finally becoming normal on the third day after treatment. Blood culture on the day serum therapy was begun proved to be sterile. Whether this was evidence of permanent or only transitory improvement cannot be determined. According to my experience a single negative blood culture in non-serum treated disease due to pneumococcus type XIV is no guaranty against the recurrence of overwhelming invasion.

The course of the second child was in striking contrast to that of the twin sister treated immediately with homologous

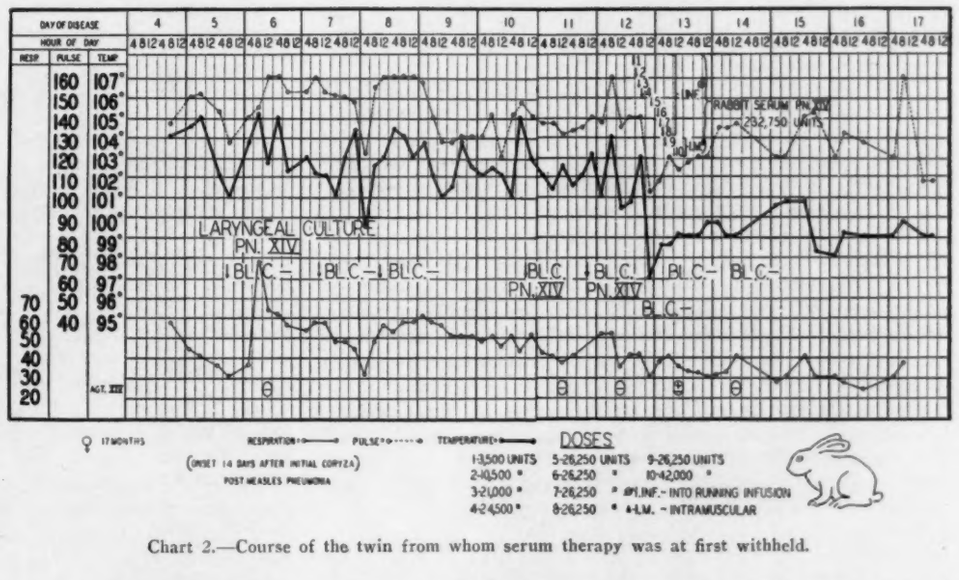


Chart 2.—Course of the twin from whom serum therapy was at first withheld.

antipneumococcus serum, who was well within three days of treatment and escaped the hazards incident to prolongation of fever and to bacteremia.

SUMMARY

One of a pair of identical female twins with pneumococcus type XIV pneumonia complicating measles was treated immediately with homologous antipneumococcus serum, responded promptly and had a short course. The other twin, from whom serum was at first withheld, had a much longer, stormy course, with bacteremia, and then responded favorably to the administration of serum.

62 West Eighty-Seventh Street.

From the Willard Parker Hospital and the Harlem Hospital.
This study received financial support in part from the Littauer Pneumonia Research Fund of New York University College of Medicine, from the Metropolitan Life Insurance Company and from Mr. Bernard M. Baruch, Mr. Bernard M. Baruch Jr., Miss Belle N. Baruch and Mrs. H. Robert Samstag. The patient in Harlem Hospital was studied and treated with the permisson of Dr. Morris Gleich, director of pediatrics.

SPONTANEOUS FEVER THERAPY IN NEUROSYPHILIS

F. E. WEATHERBY, M.D., EL PASO, TEXAS
Lieutenant Colonel, Medical Corps, United States Army

Spontaneous generalized tetany and a rectal temperature of 106.4 F. in a case of neurosyphilis, followed by marked clinical improvement, are believed to be sufficiently unusual to merit recording.

REPORT OF CASE

A woman of 31, without known syphilitic history, whose mother was said to have committed suicide while insane, had been previously married from 1923 to 1929 and had one pregnancy, giving birth to a daughter, who was 13 at the time of examination and in apparent good health. The patient had been married to her second husband since 1929, with no pregnancies.

On the day of admission she got up at 5:30 a. m., cooked breakfast and did housework in her usual manner but was observed to be out of contact with her surroundings at 7:30 a. m. She did not know the time or place, did not recognize any one and talked incoherently. At 8 o'clock she became unconscious and within a few minutes had a severe convulsion with flexion and adduction of the upper extremities, extension of the lower extremities and opisthotonos. During that day she was never free from mild or severe spasm, did not regain consciousness and had involuntary micturition and defecation.

On arrival at the hospital at 8:30 p. m., she was unconscious, with the body rigid, the jaws tightly closed, the arms forcibly flexed at the elbows, the wrists and metacarpophalangeal joints flexed and the fingers extended, the thumbs flexed into the palms, the legs rigidly extended, the feet pressed downward at the ankles and the toes extended in dorsiflexion. With increase of the spasm she occasionally presented opisthotonos. Chvostek's and Trousseau's signs were readily elicited. Her head was retracted, the eyes closed and the eyeballs rolled so that the pupils could not be readily examined when the eyes were opened. The tendon reflexes were exaggerated, and patellar clonus was present bilaterally. Increased extension of the toes was caused by plantar stimulation, and Babinski's sign was marked on the right. Abdominal reflexes were not obtained. Breathing was rapid, with an expiratory groan of automatic character. The systolic blood pressure was 110 and the diastolic 60. Her weight was 108 pounds (49 Kg.).

Urine obtained by catheter was alkaline and contained albumin and granular casts. The blood count showed 13,000 white cells, with 79 per cent granulocytes. The spinal fluid was clear, dropped slowly and showed increased globulin and 39 white blood cells, of which 34 were lymphocytes. A report received later showed the Wassermann reaction to be 4 plus in all dilutions, including 0.2 cc.; the colloidal gold reaction was 5553100000. There were 4 plus Wassermann and Kahn reactions of the blood, the quantitative Kahn test being reported as showing 40 units. The carbon dioxide combining power of the blood was 84.4 cc., the nonprotein nitrogen content 30 mg. and the sugar content 66.6 mg. per hundred cubic centimeters.

The patient was given 10 cc. of 10 per cent calcium gluconate intravenously. (Two more injections of the same amount were given the next day.) The gastric contents were opaque and greenish blue. No poisons were discovered. The stomach was washed and 300 cc. of water allowed to remain.

The temperature on admission was 103.8 F. (axillary), the following day 102 F. (axillary) at 8 a. m., 104.4 F. (rectal) at noon and 105.4 F. at 4 p. m. The spasmodic state continued, although the manifestations were less severe, and the patient remained unconscious and incontinent. Ophthalmoscopic examination showed normal fundi. The carbon dioxide combining power dropped to 49 cc. and the nonprotein nitrogen content rose to 39.9 mg. and the sugar content to 166 mg. per hundred cubic centimeters. The calcium content of the blood was 6.2 and later 6.4 mg. By 11 p. m. the temperature had risen to 106.4 F. (rectal) and ranged from 104.6 F. at 6 a. m. to 105.4 F. at 4 p. m. on the third day. A fatal outcome was expected.

From the Neuropsychiatric Section, Medical Service, William Beaumont General Hospital.

Tryparsamide 1 Gm. was given intravenously at 6 p. m. The temperature was 105.2 F. at 7 o'clock but fell to 101.4 F. by midnight. The patient was delirious, restless and screaming during the night but was quiet the next day, and her temperature did not rise above 99 F. Tryparsamide 1 Gm. was repeated. Vomiting was frequent but ceased after a saline purge. The patient was conscious and able to talk, and her muscles were relaxed. Although she was occasionally restless, disturbed and noisy during the next two nights, her condition rapidly improved, she took nourishment well and she had no recurrence of fever.

A third injection of 1 Gm. of tryparsamide was given two days after the second, followed by 2 Gm. five days later and another 2 Gm. after a three day interval. In three more days an injection of 3 Gm. of tryparsamide was given. This was repeated one week later, after which weekly injections of a bismuth preparation were begun.

The patient walked outdoors ten days after she came to the hospital and had no recurrence of spasm or mental symptoms, although she had no memory of the period of her acute attack. Neurologic examination gave entirely negative results except for a somewhat limited pupillary reaction to light. Seven weeks after the onset of acute symptoms the Wassermann and the Kahn reaction of the blood remained 4 plus, but the quantitative Kahn test showed a drop to 15 units. The spinal fluids showed 8 cells, a heavy trace of globulin, a Wassermann reaction still 4 plus in 1 cc., 0.7 cc. and 0.5 cc. but 3 plus in 0.2 cc., and a colloidal gold reaction of 4543100000.

COMMENT

High temperatures have been reported in cases of cerebral syphilis, but they have usually been associated with acute meningeal reactions and the presence of many cells in the spinal fluid. In the most acute stage this patient showed only 39 cells. Involvement of the hypothalamic centers is a possible explanation of the hyperpyrexia.

Rapid clinical improvement without residual mental symptoms is probably to be attributed to the spontaneous fever as well as to subsequent antisyphilitic medication.

DYSPNEA DUE TO TWIN ABSCESSES AT THE SIDES OF THE LARYNX

VIRGIL J. SCHWARTZ, M.D., MINNEAPOLIS

Abductor paralysis of both vocal cords is, fortunately, a very unusual occurrence. Like unilateral abductor palsy, it is practically always due to organic disease. Thomson states that it is due either to bilateral pressure on the recurrent nerves or to a bulbar lesion, usually syphilitic, involving the recurrent centers in the medulla, which are situated in the floor of the fourth ventricle. If the cardiac inhibitory center is also involved, as evidenced by a rapid pulse without fever, and if other nearby cerebral centers are affected, such as those of the eyes, tongue and pharynx, the localization points rather definitely toward the medulla. If, however, these signs are not present, one concludes that there is simultaneous peripheral involvement of the two recurrent laryngeal nerves. This rare condition is illustrated by the following case:

G. E., a woman aged 30, was brought into the hospital complaining of extreme difficulty in breathing of only four hours' duration. Pain and swelling had appeared in the ankles and knees about eight days before; these became rapidly worse and spread to the wrists, elbows and shoulders, although the ankles were the most severely involved. These symptoms were accompanied by chills and fever. A few hours before admission the patient had noticed sudden inspiratory difficulty, and she was sent to the hospital. The past history contained nothing relevant.

At admission the temperature was 104.6 F. by rectum, the pulse rate 138, the respiratory rate 28 and the blood pressure normal. There were cyanosis and severe inspiratory difficulty with stridor. The joints of the toes, fingers, ankles, knees, elbows, wrists and shoulders were swollen, hot, tender, and discolored with bluish red patches. There were a number of pustular eruptions on the buttocks. The urine showed a 4 plus

reaction for albumin, a few granular casts and a few pus cells. The hemoglobin content was 88 per cent, the red cell count 4,300,000 and the leukocyte count 7,500.

Laryngoscopic examination showed abductor paralysis of both vocal cords. In fact, it soon appeared that almost every laryngeal nerve and muscle must be paralyzed. A tracheotomy was done, and the patient's respiration at once became free, corroborating what we had previously seen during bronchoscopic examination, namely that there was no pathologic change in the trachea or bronchi and that the dyspnea was due entirely to the paralysis of the vocal cords. The patient's other conditions, however, did not improve, and she died the following day.

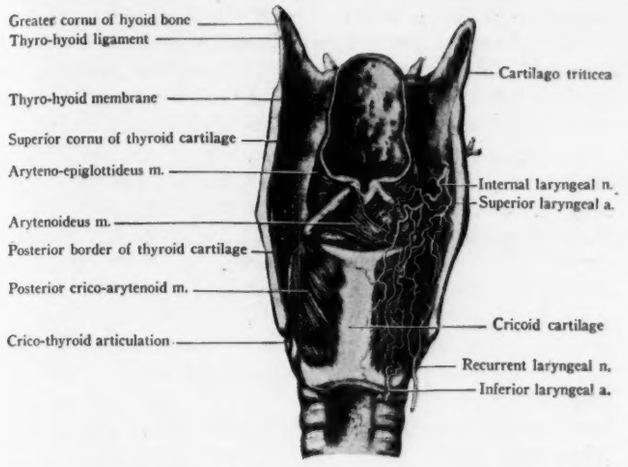


Fig. 1.—Posterior aspect of the larynx, showing nerves, vessels and muscles. Note particularly the course and distribution of the nerves and compare with figure 2. (From J. B. Deaver's "Surgical Anatomy"; reproduced by permission of P. Blakiston's Son & Co.)

At autopsy it was found that the left ankle joint was filled with creamy pus. The other joints contained a colorless serous fluid. The pathologist believed that bacteremia must have been present, although a blood culture was not made. During removal of the left lobe of the thyroid gland a small amount of thick pus escaped from the connective tissue posterior and lateral to the thyroid cartilage. On further inspection at the point where the pus had oozed out there was found an abscess about 2 cm. long and from 0.5 to 1 cm. wide posterior and lateral to the larynx. The pathologist then decided to inspect the opposite side, and he found there exactly the same sort of an abscess, localized in the same manner and apparently not connected in any way with the one on the left. In other words, these abscesses were probably metastatic, each one having developed independently by deposition of blood-borne bacteria, which doubtless came originally from the left ankle joint. The formation of one such abscess would be strange enough, but the development of two, one on each side, of exactly the same size and shape and in identical locations, causing pressure on the nerves entering and leaving the larynx so as to produce precisely the same type of pathologic change in the two sides, is a circumstance that could not have been more accurately executed if it had been deliberately planned.

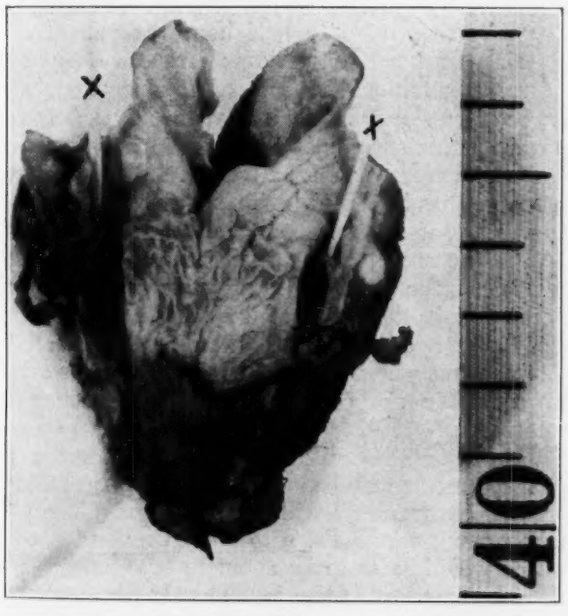


Fig. 2.—Larynx of G. E., posterior aspect (same view as figure 1). The indicators (*x*, *x*) point to abscess cavities (dark areas) at each side of the larynx. These were the cause of the paralysis.

617-619 Medical Arts Building.

PELLAGRA WITH PSYCHOSIS AND MINIMAL PHYSICAL SYMPTOMS

VERNON L. EVANS, M.D., AURORA, ILL.

The prompt response of pellagra to nicotinic acid therapy, as recently reported by a number of writers,[1] affords an excellent therapeutic test and may show the presence of pellagra in many cases of hitherto undiagnosed disease. The following case is believed to bear this out:

REPORT OF CASE

A single woman aged 38 had been unable to work for eleven years owing to weakness, headaches, undernourishment and anorexia. There had been no ingestion of drugs. The patient had believed herself subject to disease of the stomach and gallbladder, and there were numerous physical complaints.

Aug. 1, 1938, she entered a general hospital for study and treatment. There were no "mental" symptoms at that time. While she was there, complete anorexia developed, and the patient became suspicious, hostile, disoriented and violent. When members of her immediate family came to see her she did not recognize them.

August 12 the patient was transferred to Mercyville Sanitarium. On admission she was disoriented, resistive and combative. She seemed to be having vivid visual hallucinations.

The patient was emaciated. She resisted every step of the examination. She had to be held on the scale, so that the determination of weight was only approximate, at about 73 pounds (33 Kg.); the height was 5 feet 1½ inches (156 cm.). The pulse was rapid but could not be counted accurately because of the continuous twisting and pulling of the patient. The temperature was normal and the blood pressure 130 systolic and 95 diastolic. The mucous membrane of the mouth and tongue was rather more red than normal but not markedly so. The extremities were thin and there were a few scattered bruises. There was no dermatitis. The patient flopped about in a haphazard manner and had to be forced to do nearly everything, but there was apparently no incoordination, as she struck at those about her with fair accuracy. The reflexes could not be tested, owing to the resistiveness and rigidity of the patient. The physical examination gave negative results otherwise.

The hemoglobin content was 12.8 Gm. (Sahli), the erythrocyte count 4,420,000 and the white blood cell count 7,400. Urinalysis gave negative results.

The patient refused all food and drink and required forced feeding.

August 15 she received 500 mg. of nicotinic acid in divided doses, placed in her feedings. This dose was given daily thereafter. The next day she took food voluntarily. The following day she conversed rationally but still was rather hostile and believed that she was being mistreated. She wrote a fairly intelligent letter home. At the end of four days she was perfectly rational in her conversation, became agreeable and cooperative and stated she was feeling much better.

1. Pellagra and Nicotinic Acid, editorial, J. A. M. A. **110:** 289 (Jan. 22) 1938. Spies, T. D.; Cooper, Clark, and Blankenhorn, M. A.: The Use of Nicotinic Acid in the Treatment of Pellagra, ibid. **110:** 622 (Feb. 26) 1938. Advances in the Treatment of Pellagra, editorial, Ann. Int. Med. **11:** 1760 (March) 1938.

Since then the patient has had the freedom of the building and grounds, and she has been friendly and cooperative. She has been eating well, and on Sept. 1, 1938, her weight was 85½ pounds (39 Kg.).

SUMMARY AND CONCLUSIONS

The case reported would probably have been classified as one of schizophrenia or toxic psychosis if it had not been for the therapeutic test afforded by the nicotinic acid. Drug intoxication was definitely ruled out. Careful inquiry failed to reveal any history of the taking of barbiturates or other sedatives prior to the onset of the psychosis. The only physical symptom of pellagra noted was the moderate glossitis and stomatitis. There was no diarrhea, and the patient after recovery reported only a tendency to constipation.

The clinical picture was of a patient who had suffered for several years from a psychoneurosis with anorexia nervosa and malnutrition. This had culminated in a severe psychosis, which promptly and dramatically responded to the administration of nicotinic acid, the antipellagra vitamin.

33 South Island Avenue.

Special Article

CONFERENCES ON THERAPY

TREATMENT OF CONVULSIONS

NOTE.—*These are actual reports, slightly edited, of conferences by the members of the Departments of Pharmacology and of Medicine of Cornell University Medical College and the New York Hospital, with the collaboration of other departments. The questions and discussions involve participation by members of the staff of the college and hospital, students, and visitors.*

DR. HARRY GOLD: The subject of the conference today is the treatment of one of the most dramatic symptoms encountered in the practice of medicine, namely convulsions.

Two features characterize this symptom, and both have an important bearing on the problems of treatment. First of all, convulsions almost invariably present an emergency. Secondly, as a symptom the convulsion not only is a manifestation of disease but is in itself a menace to life; how serious a menace to life probably depends in part on the condition in the course of which the convulsions occur. In the pharmacology laboratory this fact can be readily demonstrated. For example, a fatal dose of camphor may cause convulsions during a period of many hours before death occurs. After a fatal dose of nicotine, however, death may occur following only two or three convulsions. That death is due in the latter case to the convulsions is clear from the fact that, if the convulsions are prevented or promptly arrested, the animal survives. It behooves us to give some thought to the question of how dangerous a convulsion in a given situation may be. Its treatment often involves heroic doses of drugs, and the danger of the treatment must be balanced against that of the convulsion itself. We need to consider therefore not only the general treatment of convulsive seizures but the special problems presented by the various and diverse clinical conditions in which convulsions occur. How some of these are managed and how the more important drugs are put to use most effectively in the treatment of convulsive states will be considered this morning.

I have here a list of the more common agents used in the management of convulsions, some of which will be discussed: ether, chloroform, chloral hydrate, paraldehyde, bromides, barbiturates, morphine, magnesium sulfate, calcium salts, hypertonic dextrose, vitamin D, parathyroid extract, dilantin and the ketogenic diet. Dr. Wolff will lead the discussion.

DR. H. G. WOLFF: The following remarks are based on the thesis that the convulsion is a symptom and should be treated as such. There are sixty or more known causes for the convulsion in man. We may therefore waive a discussion of the varieties and turn to the management of the convulsion itself. Most convulsions occur singly and the patient requires no further attention other than that which would be given to any one who has fallen to the ground and is having violent adventitious movements. This means protection from neighboring objects and protection of the tongue. It does not mean bruising the gums or knocking out teeth with instruments in an attempt to open the mouth. The patient should, when possible, be secluded from the crowd or family, often greatly disturbed by this dramatic incident. A dose of 60 mg. of soluble phenobarbital may be given intramuscularly. Commonly the patient will soon recover and be able to return to his home or go on with his work. If he does not he may be taken to a hospital to regain consciousness.

One warning: When planning in response to an urgent call for help to give an unconscious patient caffeine, see that it is not the unconsciousness that follows a convulsion, for under those circumstances it is obvious that the effect may be opposite from that desired.

Should convulsions occur in series, as they sometimes do in epilepsy, or in eclampsia or following drug intoxications, other steps must be taken. It is then desirable to put the patient in a dark quiet room and give intravenously from 180 to 300 mg. of soluble phenobarbital very slowly, so that the injection takes five minutes in all. If at the end of a half hour the patient is still quivering or having myoclonic jerks or has another seizure, an additional 60 mg. of soluble phenobarbital may be given slowly by the intravenous route. If necessary, the administration of 60 mg. doses may be repeated at half hour intervals until a total of 1.2 Gm. in twenty-four hours has been given. This may be considered the upper limit of safety.

As an alternate for the management of a series of convulsions, the following is suggested: a subcutaneous injection of 15 mg. of morphine sulfate and 0.5 mg. of scopolamine hydrobromide. As a second alternate ether anesthesia may be administered for one to two hours. However, the use of the barbiturates is in general preferred.

With regard to eclamptic convulsions some additional comments may be made. The management introduced by Stroganoff I will briefly outline. The patient in impending eclampsia, who has either had a convulsion or would seem to be about to have one, is placed in a dark quiet room and immediately given 15 mg. of morphine sulfate. One hour later the patient is given 2 Gm. of chloral hydrate by rectum if unconscious, in 100 cc. of physiologic solution of sodium chloride or, if alert, by mouth in an equivalent amount of milk. Three hours later 15 mg. of morphine sulfate is given once again; seven hours later 2 Gm. of chloral hydrate by mouth or rectum, thirteen hours later 1.5 Gm. of chloral hydrate, and finally, twenty-one hours later, 1.5 Gm. of chloral hydrate. This is an arbitrary program, and sodium bromide in equivalent amounts may be substituted for the chloral hydrate. It insures more

or less continuous sedation for about twenty-four hours, which is usually all that is needed.

Uremia usually offers the special problems of the treatment of nephritic patients, but the convulsions can be controlled when necessary by the procedures already outlined for the management of status epilepticus.

The prevention of convulsions is the second topic for consideration. I have mentioned before that there are many causes of convulsions, and after a careful search one is unfortunately often left with the diagnosis of idiopathic epilepsy or convulsions of undetermined origin. In such instances, or in case a cause is found that cannot be removed, one is obliged to proceed in a manner that will prevent or reduce the number of convulsions. How may this be done? The facts outlined in the accompanying table are true of convulsions in general.

What are the factors that increase the likelihood, and what are the factors that decrease the likelihood of convulsions? In this table those that prevent are on the left, and those that precipitate or increase the likelihood are on the right. Acidosis, produced by fasting, fat diet, ingestion of acids, such as mandelic acid, or acid-forming salts, such as ammonium chloride, breathing high carbon dioxide, low chloride, high calcium, normal sugar, low fluids reduce the likelihood; while high chloride, low calcium, hypoglycemia, and hydration increase the likelihood. Further, adequate sleep prevents, while inadequate sleep with fatigue acts as a precipitating factor; constructive emotions making for contentment prevent, while destructive emotions, tension, rage, resentment, frustration and boredom have the opposite effect. The factors of lesser clinical importance I will not discuss.

In the management of the patient the first five in the list are most important. If I were to guess about the relative value of the various factors in management I would say that the constructive emotions and sleep will rate about 40 per cent, attention to chemical factors including sedatives and water intake, perhaps 30 to 40 per cent, and all the other factors put together, about 10 per cent.

In the first place, patients who have only one or two convulsions a year are better off without sedation. Before drugs can be used with any satisfaction, three sets of facts should be known: The first concerns the problem of age: At what ages are convulsions most likely to occur? Most convulsions occur in the first twelve months of life. There is another peak in incidence at adolescence, and a third peak at age 60 or thereabouts. There are minor peaks at 7 and at 25. Second, when in the twenty-four hours in any given individual are convulsions most likely to occur? Fifty per cent of convulsions occur between 10 p. m. and 5 a. m., another 15 per cent between 5 a. m. and 9 a. m., and 35 per cent throughout the rest of the day. Also in this climate more convulsions occur in the darker or colder months than in the summer months. Lastly, in women convulsions are more apt to occur in association with menstruation, either before, during or after, than at other times.

We may now continue with the discussion of the management and prevention of attacks by the use of drugs. Phenobarbital may be given by mouth in amounts of 15, 30 or 60 mg. three times a day, no more being given than will keep the patient free or nearly free of convulsions. If phenobarbital cannot be tolerated, sodium bromide may be used in amounts of 0.3, 0.6 or 0.9 Gm. three times a day. Phenobarbital is best used in amounts not exceeding 60 mg. three times a day. If the patient is still having convulsions under those circumstances, it is recommended that sodium bromide be added to the evening or morning medication.

Sodium bromide has an advantage in that the amount of bromide may be easily determined in the blood. Because of the troublesome delirium that results from excessive ingestion of the drug, bromide should never exceed 125 mg. per hundred cubic centimeters of blood. Bromide has the disadvantage of producing an acne. Sometimes this can be overcome by the use of solution of potassium arsenite (Fowler's solution) given in amounts of 5 drops three times a day.

How to stop treatment: Sedative therapy should not be discontinued completely within two years of the time of the last convulsion. Moreover, it is important never to stop suddenly but always to reduce sedation gradually no matter what its nature.

DR. GOLD: Dr. Gordon will discuss some of the problems that arise in pediatric practice in connection with the treatment of convulsive states.

Convulsions

	Conditions Which May Tend to	
	Prevent Seizures	Precipitate Seizures
Acid-base equilibrium...	Acidosis by means of fasting, fat diet	
	Ingestion of acids or acid-forming salts	Alkalosis by means of ingestion of alkali
	Breathing high carbon dioxide	Hyperpnea "blowing off" carbon dioxide
Chemical constituents..	Low chloride	High chloride
	High calcium	Low calcium (tetany)
	Normal sugar	Hypoglycemia
Water balance.....	Dehydration	Edema
Sleep.....	Adequate (8-9 hrs.)	Inadequate—fatigue
Emotions.....	Contentment or satisfaction	Tension, rage, resentment, frustration, boredom
Oxygen.....	Rich supply	Poor supply
Permeability of tissues.	Decreased	Increased
Intracranial pressure...	Decreased	Increased
Intracranial circulation	Unimpaired	Impaired

DR. H. H. GORDON: If called over the telephone to treat an infant or child with convulsions, one may ask the mother to give her infant or child a warm tub bath. It is necessary that the room be warm and the infant may be carefully immersed in water at a temperature of approximately 90 F. for about five or ten minutes. The infant or child may then be taken from the tub and wrapped in warm blankets. There is a great deal of doubt concerning the efficacy of this measure, but it gives the frantic mother something to do while awaiting one's arrival. On arrival, if the infant or child is still having convulsions, it is advisable to administer some sedative, preferably after observing the nature of the convulsion. One may give chloral hydrate in a 5 to 10 per cent solution by rectum, administering from 0.2 to 0.3 Gm. for infants less than 6 months of age and from 0.3 to 0.6 Gm. for infants over 6 months of age, or one may give soluble phenobarbital hypodermically in doses of from 15 to 30 mg. as the initial dose. After administration of the sedative, information may be obtained from the mother and from physical examination which will give a clue to the etiology of the convulsions, and this in turn will guide further treatment.

Convulsions may be divided into several groups according to etiology. First are the convulsions that occur at the onset of acute infections. This represents

the largest group that are seen, and fortunately these convulsions tend to be self limited. As one might expect, it is in this group that one obtains the most salutary effect of the warm tub baths. In the treatment of these children a prominent pediatrician has recommended that the best method of procedure is to drive directly to the patient's home and then three times around the block before parking. By the time one arrives, the convulsion will have subsided. I think that until one learns to know those members of one's clientele that are apt to have convulsions at the onset of fevers it is probably more advisable to go directly to the scene and administer some therapy. Prompt use of antipyretics may prevent the high fevers which are frequently associated with convulsions. At the onset of a contagious disease, such as measles or with meningitis, convulsions may occur which last for three or four hours and do not respond to the customary doses of chloral hydrate or soluble phenobarbital. In such individuals one may have to resort to ether or occasionally to avertin with amylene hydrate given by rectum in doses of approximately 80 mg. per kilogram of body weight.

The second group of convulsions, tetany, are associated with a decrease in the ionized blood calcium. We see these convulsions in infants with rickets, particularly between the ages of 6 and 18 months. Tetany also occurs in younger infants—infants who are less than 3 months of age, and even in the newborn period. In this group there is usually no evidence of rickets, and because, in addition to a low calcium, a high blood phosphorus has been found, it has been suggested that these infants have transient hypoparathyroidism. Tetany occurs in association with alkalosis. When prolonged vomiting has taken place, with loss of chlorides, alkalosis may develop, with resultant decrease in ionization of calcium and symptoms of alkalotic tetany or "gastric" tetany. Finally there are the rare cases of spontaneous or postoperative hypoparathyroidism. In all these subjects the obvious remedy is to increase the blood calcium, and this can be done by the administration of calcium chloride. Usually it is given in a 10 per cent solution in milk, in an initial dose of from 2 to 4 Gm. for infants above 6 months of age, followed by from 1 to 2 Gm. every six hours thereafter. For infants of less than 3 months we give from 1 to 2 Gm. of calcium chloride as the initial dose, followed by 0.5 Gm. every six hours thereafter.

An occasional infant will vomit calcium chloride. One may then give calcium lactate. If calcium lactate is used, one has to give from one and a half to two times as much as of calcium chloride. This is for two reasons: In the first place, calcium lactate has less calcium per gram than calcium chloride. In the second place, calcium chloride is more effective in raising the ionized blood calcium. The chloride ion is absorbed more rapidly than the lactate, producing a tendency toward acidosis, and therefore to increased ionization of whatever calcium is available in the blood stream.

Occasionally one administers calcium parenterally, using calcium gluconate, 10 per cent solution, in doses of from 5 to 10 cc. intramuscularly. In small infants and infants with not very much adipose tissue it has been reported that parenteral calcium has left persistent hard nodules, so that parenteral calcium is not used unless oral administration is impossible because of incessant convulsions. The administration of vitamin D preparations in adequate amounts to prevent rickets has decreased the incidence of tetany. Tetany is now seen more rarely in association with rickets than previously, and more individuals are being reported with the disease in the group of younger infants.

Convulsions occur not infrequently in the newborn period. They may be associated with cerebral hemorrhage. Cerebral hemorrhage may be secondary to birth injury. Under such conditions sedatives are administered in the doses previously mentioned, and if a bulging fontanel exists a lumbar puncture may help reduce the frequency of convulsions. Intracranial hemorrhage may be a manifestation of hemorrhagic disease of the newborn, and if an infant shows a tendency toward bleeding anywhere else, a transfusion which stops the bleeding will stop the convulsions. Convulsions in the newborn may be in association with anoxemia due either to atelectasis or to congenital heart disease. In such infants the administration of oxygen will aid in stopping the convulsions.

In patients with congenital cerebral defects, convulsions may be recurrent, and in these the treatment will follow essentially the principles that Dr. Wolff has outlined for treatment of epilepsy.

Finally, there is one acute specific infection associated with convulsions in childhood, namely tetanus or lockjaw. In the treatment of tetanus excellent results have been obtained by the use of avertin with amylene hydrate in doses of from 80 to 100 mg. per kilogram of body weight, given as often as two or three times a day. Such treatment permits the peaceful administration of serum and parenteral fluids to an individual without inciting convulsions.

Dr. Gold: Dr. Milhorat will continue the discussion.

Dr. Ade T. Milhorat: I may first make a few remarks about some of the agents which have just been considered in the treatment of convulsions. There is a large group of barbituric acid compounds that are used in therapeutics. Their most important action is that of depression of the central nervous system. The degree depends on the size of the dose. Qualitatively their essential effects are similar. Some of the compounds, however, do show significant quantitative differences in potency. It takes more barbital than phenobarbital, for example, to produce similar effects. They also differ with respect to the duration of their action. Some of the barbiturates produce narcosis which may last as long as from twenty-four to forty-eight hours (barbital and phenobarbital); in the case of others, such effects may wear off within about a half hour. On the basis of safety there is little to choose between them, except that in the case of overdosage the more rapidly eliminated compounds provide an advantage. Barbital is eliminated from the body mainly by excretion in the urine. The other barbituric acid compounds that are generally available are, for the most part, broken down in the liver, none of the dose, or at most only a small part of it, being excreted in the urine. In their acid form the barbiturates are insoluble in water and are suitable only for oral administration. The sodium salts, however, are quite soluble and these are employed for intramuscular or intravenous injection. The Pharmacopeia describes the compound Soluble Barbital, which is barbital sodium, and Soluble Phenobarbital, which is phenobarbital sodium.

It should be remembered that the intravenous administration of these drugs is not without danger. Doses large enough to produce general anesthesia should be avoided. In general it would be wise not to exceed one

fourth of the anesthetic dose as the first injection, and additional smaller amounts may be given as necessary. Furthermore, an intravenous injection of these compounds should be made very slowly, since the rapid intravenous injection is likely to produce pronounced fall of the blood pressure. The danger in such cases is, of course, respiratory and vasomotor paralysis.

Ether is useful in controlling violent convulsions and has the advantage of the ease with which the depth of narcosis can be controlled. On the other hand, it requires such constant vigilance that its use becomes extremely difficult in cases in which pronounced depression is necessary over long periods of time.

The bromides have an interesting mode of action. They replace chlorides in all the tissues, which phenomenon appears to be of no particular significance to any but the tissues of the central nervous system. Their accumulation causes depression of the central nervous system, which varies with the dose. As one might expect, their excretion is hastened by the administration of chlorides. So it is well to limit chloride intake in order to maintain protracted bromide effects. There is no real difference between the sedative action of the various bromides, such as sodium, potassium or calcium bromide. On the whole, sodium bromide is perhaps preferable because the potassium ion is more toxic. One of the disadvantages of continued administration of the bromides is the rather frequent occurrence of acne.

Avertin with amylene hydrate is used by rectal instillation, has the advantage of being rapidly absorbed in that way, and in moderate doses of the order of about 40 mg. per kilogram produces fairly satisfactory and safe depressant effects. It is eliminated by the kidneys. This fact must be taken into account when its use is contemplated in patients with impaired renal function.

Chloral hydrate is among the older hypnotics and is not so popular at the present time. Its toxic effects are similar to chloroform and it is therefore unsuited for protracted administration. It is too irritant to be given in tablet form. Its solutions are also quite irritant and its taste is not pleasant. It is best given dissolved in a vehicle, such as aromatic elixir, and should be well diluted. It may also be given by rectum. It is eliminated by excretion in the urine in an altered form in combination with glycuronic acid.

In the short time remaining, I may say a few words regarding the treatment of convulsions due to poisoning by drugs, such as the local anesthetics, strychnine, camphor and picrotoxin. These all may cause death by paralysis of respiration, but the paralysis is not produced in the same way in all cases. We should keep this in mind in our treatment. The barbiturates can abolish the convulsions caused by cocaine, and this is useful because the convulsions have a damaging influence on respiration. It appears to be necessary to abolish the convulsions to afford protection. But it is an easy matter to do harm with the barbiturate because cocaine itself directly depresses the respiratory center and so do the larger doses of antidote. The case of strychnine convulsions is different. Strychnine causes increased reflex excitability, which fatigues the respiratory center as shown by Gold and Travell, and this hyperexcitability of the center rather than the convulsions plays the major role in causing cessation of respiration. Therefore depressant drugs, such as the barbiturates, ether or alcohol, can prevent the respiratory depression of strychnine even when they fail to abolish the convulsions. From the practical standpoint it is wise to maintain a state of moderate hyperexcitability in strychnine and cocaine poisoning so as to avoid overdosage with the depressant.

DR. GOLD: I am sorry to have to cut short the direct discussion. We should like to have as much time as possible for questions.

STUDENT: In a series of patients coming in with epileptic seizures, about what percentage have an organic lesion that can be demonstrated by the encephalogram or other diagnostic procedure?

DR. WOLFF: You are leaving out of consideration the group that have brain lesions that cannot be demonstrated by our available methods?

STUDENT: Yes.

DR. WOLFF: I am guessing, but I would say between 10 and 15 per cent have lesions that can be demonstrated with our available methods.

STUDENT: How effective is magnesium sulfate in the treatment of convulsions, particularly in the eclamptic?

DR. WOLFF: Very effective. I have left it out of my discussion because the agents I referred to probably have the most behind them in the way of experience. Magnesium sulfate is an excellent drug and may be used if you happen to like it. There is nothing against it.

STUDENT: Would you say something about the care of the tongue in convulsions?

DR. WOLFF: Most people do not need anything done to their mouths during a convulsion. The tongue usually falls back and out of the way of the teeth, yet it does not fall back far enough to cause asphyxia. As you look at the patient during a convulsion, keep "an eye" on the mouth, and color, but look especially for evidence that might be useful in localizing a lesion. Usually you are not called on to do anything more active than to sit at the side of the patient and prevent him from hurting himself, assuming the patient does not have a destructive or dangerous delirium. Moreover, you need seldom do anything about the tongue. It will take care of itself.

Was there some special aspect I did not touch on?

STUDENT: Yes, how about gags?

DR. WOLFF: The gag is a vicious instrument in my opinion. It is made of one or two tongue depressors held together with a piece of adhesive plaster on one end. The patient has this end put between the teeth, preferably between those in back. It is hoped that the teeth will close down on it. What often happens is that somebody has to force the jaws apart in order to get the gag in place. I do not think the apparatus is useful. If the tongue has already been caught between the teeth, the injury has been done.

DR. MILHORAT: May I ask Dr. Gold a question? What is your feeling regarding the use of paraldehyde in convulsions? The drug is used very little, yet it would appear to be a relatively safe drug.

DR. GOLD: Perhaps paraldehyde ought to be used more commonly than it is, although it does possess a very disagreeable odor. It can be given in large doses with safety. There are some interesting reports on the use of paraldehyde in obstetric analgesia; in one of these they used doses of the order of 8 drachms (30 cc.) of paraldehyde by rectal instillation together with 1.5 cc. of benzyl alcohol to reduce the effects of the irritant action of the paraldehyde on the rectum.

Smaller doses have been repeated as necessary during the day, and they appeared to be both effective and safe.

Dr. J. E. Deitrick: Is the action of paraldehyde by rectum as rapid as soluble phenobarbital intravenously? In a patient coming into an accident room with convulsions, isn't it difficult to insert a rectal tube and give paraldehyde in that way?

Dr. Gold: I quite agree. On the other hand is it not just as difficult to make an intravenous injection of soluble phenobarbital during convulsions? A subcutaneous or intramuscular injection is, of course, much easier but the effects are delayed.

Dr. Deitrick: I should like to ask another question about paraldehyde while we are on the subject. Would you recommend its being given intravenously? I had it given intravenously in two cases with striking therapeutic effects.

Dr. Gold: Paraldehyde has been used intravenously, and I see no reason why it cannot be given intravenously. One should be certain of its purity, since ordinary commercial samples often contain significant amounts of acetaldehyde. The dose is about 4 cc. in a 10 per cent solution of physiologic solution of sodium chloride.

Are there any other questions?

Student: Should the occasion arise in a digitalized patient in which it is necessary to give large doses of calcium, is there any contraindication for its use?

Dr. Gold: No, there is no absolute contraindication, but it ought to be given more cautiously because of the possibility that a fully digitalized subject may be more susceptible to calcium. The fear of the combination arises chiefly from experiments in animals. These show a synergism between the two drugs when toxic doses of each are given. Recent experiments in our laboratory, however, show no serious effects of the combination when both drugs are given in amounts comparable to even the highest amounts used therapeutically.

Student: I should like to ask Dr. Gordon what other procedures are used in children with laryngeal spasm during the convulsion.

Dr. Gordon: Occasionally laryngeal intubation will be used, if the oral, intramuscular or intravenous administration of calcium has not relaxed the laryngospasm. This is very rare.

Dr. Milhorat: A great deal is said about the occurrence of skin rashes in patients who are given phenobarbital, but isn't it a fact that in the large series of patients with epilepsy who are treated in our neurologic clinic with continued administration of phenobarbital these have occurred only in probably one or two instances?

Dr. Wolff: Yes, cutaneous manifestations are uncommon in our series of patients with convulsions.

Student: Could I ask Dr. Wolff about the present evaluation of ketogenic diets in epileptic seizures.

Dr. Wolff: They are expensive and inconvenient for the patient. There are instances in which the ketogenic diet is found to be useful.

Student: You mean you would use it after trying the other methods?

Dr. Wolff: My own practice is to reduce the fluids to between 500 and 800 cc., to have the patients take a diet which approximates two calories of fat to one of carbohydrate, which is not a ketogenic diet, but one which is not so expensive or not so inconvenient. The total calories are 2,600. In addition, I give phenobarbital, starting with 15 mg. three times a day, and raise it 15 mg. per dose daily until I get the desired effect. In short, I use an eclectic method.

Dr. Gold: I believe it was stated here that the adult during a convulsion is given a dose of 60 mg. of phenobarbital, and Dr. Gordon gives an infant a dose of 30 mg. Infants may then receive as much as one half of the dose given to adults. If the weight of the infant is taken at about 30 pounds and Dr. Wolff's adult at about 150 pounds, the infant receives 2.5 times as much as the adult on the basis of their weights. Is the infant more tolerant to phenobarbital than the adult, or is the dose larger than necessary for infants? That is the first question. The second is: Why does phenobarbital receive preference over other barbituric acid compounds? Do you believe it more effective or safer?

Dr. Wolff: One assumes that patients will take some sedative drug for years. Certainly 60 mg. three times a day is probably not the limit of tolerance of a patient, but when you appreciate that the drug is going to be taken daily for years in amounts of 180 mg. it does seem to be about as much as should be given.

Dr. Gold: From experiences I have had, I believe children commonly receive excessive doses of sedatives. As to adults, suppose that 1 grain three times a day is not adequate to control the convulsions; is it not all right to give them 2 or even 3 grains?

Dr. Wolff: I dare say. If 60 mg. three times a day is inadequate, I prefer to supplement the drug with bromides, i. e. 60 mg. of phenobarbital three times, plus whatever additional bromide is necessary. From a toxicologic standpoint it would probably be reasonable to give greater amounts of phenobarbital if desired.

Student: Why phenobarbital and not some other barbituric acid compound?

Dr. Wolff: It just happens to be one that has behind it a tradition of use. It is an agent that I happen to have more experience with than any other. It is a relatively inexpensive form of barbiturate, and its action is moderately prolonged. I think there is no other justification. I feel there are probably other barbiturates that would be quite as good if one happened to have a similar amount of experience with them.

Dr. McKeen Cattell: Doesn't your statement about the barbiturates apply to other sedatives as well? Isn't the selection of different sedatives in various conditions to a large extent a matter of fortuitous experience with certain compounds rather than a matter of superior merits of one over another?

Dr. Wolff: I think that is correct.

Dr. Gold: Are there any other questions?

Avertin with amylene hydrate was recommended for the control of convulsions in doses of from 80 to 100 mg. per kilogram. The literature reports deaths from avertin with amylene hydrate used in doses of the order of 120 mg. per kilogram, and I am wondering whether one is not likely to get into trouble from time to time with such doses as from 80 to 100 mg.

Dr. Gordon: My experience with the use of avertin with amylene hydrate in doses of from 80 to 100 mg. has been limited to several patients with tetanus, to whom it was given for as many as fourteen continuous days without difficulty, and with great relief of symptoms. Further experience might make for more cautious recommendations.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORTS. HOWARD A. CARTER, Secretary.

LIEBEL-FLARSHEIM GENERAL BODY QUARTZ LAMP AND ORIFICIAL ULTRA-VIOLET GENERATOR ACCEPTABLE

Manufacturer: The Liebel-Flarsheim Company, 303 West Third Street, Cincinnati.

The Liebel-Flarsheim General Body Lamp and Orificial Lamp are of the so-called "cold" type of mercury glow quartz ultraviolet generators. They are low pressure, low temperature

Liebel-Flarsheim General Body Quartz Lamp.

Liebel-Flarsheim Orificial Ultraviolet Generator.

burners. One burner is intended for general body irradiation, the other a quartz tube for orificial application. The general body type has a self-contained head, including burner and transformer, and adjustable stand. It is finished in crinkled black lacquer with chrome plated metal trim. The detachable head is equipped with a handle for transportation. When used with the stand, it may be rotated through a circle or extended 18 inches toward the side and then rotated. It is adjustable in height from 34½ to 63½ inches. The head is spring counter-

Apparent Relative Photographic Intensity of L-F General Body Quartz Lamp No. V-101 June 9, 1938

Wavelength Angstroms	Log_{10} I	I
2,536	3.25	1,780
2,650	0.65	4.5
2,804	0	1.0
2,894	.40	2.5
2,967	1.05	11.2
3,022	.73	5.4
3,130	1.80	63.

balanced for ease of adjustment. The whole is mounted on rubber tired, ball bearing casters with supporting feet heavily weighted to prevent tipping.

The professional type burner is placed in front of the transformer in the hood. This avoids exposure of the patient to contact with high voltage leads. The transformer delivers 2,000 volts on open circuit. The current to the burner under full load is 18 milliamperes. A 5 foot quartz tube burner is arranged in rectangular grid, evacuated and filled with gas and liquid mercury. It will produce a first degree erythema after two minutes' exposure at a distance of 20 inches, according to the firm.

The Liebel-Flarsheim General Body Lamp has a 26 watt input at 115 volts, 60 cycles; after it is run for some time, until stable, it has 138 microwatts per square centimeter output at a distance of 20 inches measured from the centers of the tubes for all wavelengths less than 3,200 angstroms. Over 95 per cent of the energy is concentrated at 2,536 angstroms (measured in air).

The relative values of the intensity of the lines are given in the accompanying table. The absolute measurements were made with a calibrated thermopile.

The orificial unit is supplied in a keratol-covered carrying case, which houses the transformer and also accommodates the separate burner case, the orificial applicator and supply cable. It operates on 110 volt, 60 cycle, alternating current outlet. The orificial lamp consists of a quartz tube of a fairly orthodox shape and size, held in a molded bakelite handle. The transformer delivers about 2,000 volts on open circuit; on full load the current to the lamp is 10 milliamperes. An orificial applicator of universal size to facilitate treatments to accessible orifices is supplied.

The ultraviolet output is constant and capable of producing a first degree erythema in approximately ten seconds on contact application to the skin, according to the firm. On a patient with extremely hypersensitive skin this time is reduced to about five seconds.

The output of the orificial lamp at 1 inch distance with 1 inch of tube exposed and the rest covered is 3,280 microwatts per square centimeter. The input is 9 watts at 115 volts, 60 cycles, the lamp being run until stable before measuring.

In view of the foregoing report, the Council on Physical Therapy voted to accept the Liebel-Flarsheim General Body Quartz Lamp and Orificial Ultra-Violet Generator for inclusion in its list of accepted apparatus.

WESTINGHOUSE SHORT WAVE ENDOTHERM, MODEL 400, ACCEPTABLE

Manufacturer: Westinghouse X-Ray Company, Inc., Long Island City, N. Y.

The Westinghouse Short Wave Endotherm, Model 400, is recommended for medical and minor surgical purposes. It is housed in a dark walnut cabinet. Pad, cuff and cable electrodes and felt spacers are part of the standard equipment. A treatment drum with floor stand is available. Surgical accessories may be procured for minor surgical procedures commonly employed in office practice. The instrument panel has two separate controls, one for pad, cuff and surgical procedures and one for the coil technic. There are six patient outlets, a power output meter and main switch to operate tubes, and forced draft ventilating fan.

The tubes are employed in a tuned plate, tuned grid circuit. The wavelength is 22.4 meters. Both the cable and pad circuits are inductively coupled to the oscillator circuit. For surgery there is a separate terminal receiving its energy through a small fixed condenser. A voltage regulator is supplied to compensate for the variations in the voltage of the supply line.

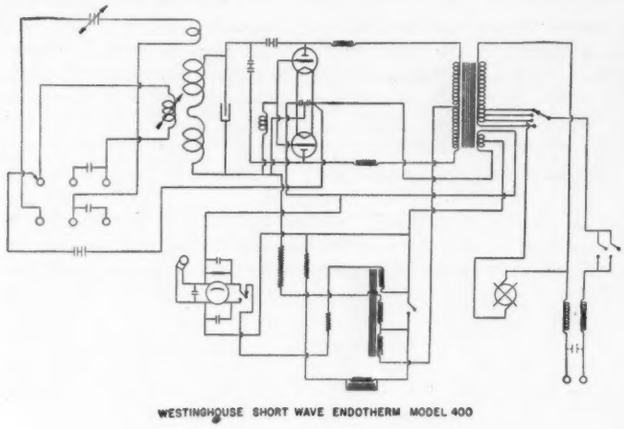
After four hours of continuous operation, the temperature rise in the outside windings of the transformer was 50 C. The power input under full load showed a maximum of 1,140 watts. A power output of 400 watts by the lamp load method claimed by the firm was verified. The tubes are protected against overload by a safety regulator.

Westinghouse Short Wave Endotherm, Model 400.

In order to substantiate heating claims made for the unit, the firm submitted tests performed by a qualified investigator. Details are given here:

Two male subjects, weighing 190 and 195 pounds respectively, were used in these tests. Twelve observations were taken, six with the inductive method and six with the double cuff technic. The technical procedure for making the tests was that recommended by the Council. A cannula was introduced at the midpoint of the thigh and inserted for a distance of 2 inches or until the femur was encountered. Temperature readings were made by means of thermocouples inserted into the cannula and constructed of constantan and copper placed in hypodermic needles. The constant junction was kept at 0 C. by placing in a vacuum bottle filled with crushed ice. The couples were calibrated in a constant temperature oil bath against a mercury thermometer certified and

calibrated by the National Bureau of Standards. Potential differences were read from a Leeds and Northrup portable potentiometer of requisite sensitivity. The accuracy is within plus or minus 0.1 degree F.



Schematic diagram of circuit.

For the coil technic three turns of the cable around the thigh were employed, equally spaced by a wooden holder. It was approximately 5 inches from the upper to the lower edge of the cable. A spacing between the cable and skin of three-fourths inch was achieved by felt and one layer of toweling. The cannula was spaced between the outside turns of the cable. Then the machine was operated to the tolerance of the patient.

Average Temperatures of Six Observations, Coil Technic

Deep Muscle		Oral	
Initial	Final	Initial	Final
99.9	106.7	98.7	99.2

Average Temperatures of Six Observations, Cuff Technic

Deep Muscle		Oral	
Initial	Final	Initial	Final
100.4	104.7	98.8	99.1

When the cuff technic was used, these electrodes were 15 inches by 3¾ inches in diameter. They were applied equidistant above and below the cannula and averaged from 7½ inches to 9¼ inches center to center. Felt spacing, from one-half to three-fourths inch, was placed between the skin and the cuff.

Average Temperatures of Six Observations, Treatment Drum Technic

Deep Muscle		Oral	
Initial	Final	Initial	Final
98.5	105.4	97.9	98.3

Average Temperatures of Six Observations, Orificial Technic

Temperature at the following times:	
5 minutes	101.8
10 minutes	106.8
20 minutes	109.5
30 minutes	109.8

Six tests were also run with the treatment drum technic. The electrode was applied over the thigh as close to the skin and nearly over the point where temperatures were read as the inserted thermocouples would permit. The patient's tolerance to heat on the skin was the control of intensity of current.

Orificial tests were run to indicate the amount of pelvic heating available with this unit. Temperatures were taken for this treatment with a large Chapman electrode. This was drilled through so that the thermometer could be passed and the mercury bulb brought into contact with cervical tissue. A large short wave pad was used as the dispersive electrode. This was spaced approximately 3 inches from the lower abdomen by means of a folded turkish towel. The thermometer was left in place throughout the treatment.

The unit was tried out clinically by a reliable investigator, who reported that it operated satisfactorily.

In view of the foregoing report, the Council on Physical Therapy voted to accept the Westinghouse Short Wave Endotherm, Model 400, for inclusion in its list of accepted devices.

Council on Pharmacy and Chemistry

REPORTS OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORTS.

PAUL NICHOLAS LEECH, Secretary.

RACÉPHEDRINE (RACEMIC EPHEDRINE), RACÉPHEDRINE HYDROCHLORIDE (RACEMIC EPHEDRINE HYDROCHLORIDE) AND RACÉPHEDRINE SULFATE (RACEMIC EPHEDRINE SULFATE)

The manufacturer of a brand of synthetic racemic ephedrine hydrochloride asked the Council to adopt a nonproprietary name. The Committee on Nomenclature voted that the name Racéphedrine be recognized as a nonproprietary designation for the racemic ephedrine base and that Racéphedrine Hydrochloride be the name for racemic ephedrine hydrochloride. The Council voted to include Racéphedrine Hydrochloride in New and Nonofficial Remedies. The Council has under consideration Racéphedrine and Racéphedrine Sulfate.

DANGER OF INTRA-URETHRAL INJECTION OF SOLUTIONS OF LOCAL ANESTHETICS

The Council has again considered a report on local anesthetics, particularly in reference to the continued reports of severe reactions following the intra-urethral injection of solutions of various local anesthetics.

The Council has long warned against the danger of such procedures. In the report of the Committee for the Study of Toxic Effects of Local Anesthetics (THE JOURNAL, March 15, 1924, p. 876) it was pointed out that "Urethral injections constitute a special source of danger. Absorption does not take place readily from the bladder or bronchial mucous membrane." It was recommended that solutions of "local anesthetics should not be injected into the urethra when trauma or stricture exists." In spite of these warnings, however, the attention of the Council office is being called more or less frequently to recurrences of toxic effects due to intra-urethral injection of solutions of local anesthetics. It was pointed out in the Council consideration that in this type of tragic accident often the occurrence is wholly unexpected and it may follow the injection of a much smaller amount than the same patient had previously had without notable symptoms. It therefore seems advisable to repeat the warning as to the use of local anesthetics intra-urethrally.

The Council directed that all manufacturers of Council accepted local anesthetics which may be used for intra-urethral injection be required to include a suitable warning of the dangers of the intra-urethral injection in the presence of trauma, or where it is likely to occur at the time of injection, when the present advertising is reprinted, and in any event within one year of the date of notification.

PRELIMINARY REPORT OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT.

PAUL NICHOLAS LEECH, Secretary.

YELLOW BONE MARROW CONCENTRATE (THE ARMOUR LABORATORIES)

In 1934 Armour and Company presented Yellow Bone Marrow Concentrate, stated to be "a concentrated oily solution of the physiologically active substances which promote the formation of granulocytes and are present in the yellow bone marrow of cattle and other domestic animals used for food by man." It is proposed for use in agranulocytosis.

The firm submitted a number of case reports collected by the Sprague Memorial Institute and the Department of Pathology of the University of Chicago and stated that reports were being prepared for publication. Reference was made to the paper of Griffin and Watkins which appeared in THE JOURNAL, Aug. 23, 1930, page 587. At that time the firm was informed that the Council could not report satisfactorily on the product because of the paucity of clinical evidence.

Since that time the consideration was held in abeyance until the firm in 1938 reopened the matter and submitted reprints of two articles (Marberg, C. M., and Wiles, H. O.: Granulocytopoietic Fraction of Yellow Bone Marrow, *Arch. Int. Med.* **61**:408 [March] 1938 and Marberg, C. M., and Wiles, H. O.: Yellow Bone Marrow Extracts in Granulocytopenia, THE JOURNAL, Dec. 11, 1937, p. 1965).

The Council's referee reviewed this evidence carefully and summarized the situation as follows:

1. The beneficial effect of Yellow Bone Marrow Concentrate (The Armour Laboratories) has been evidenced in six cases of what seems to be true agranulocytic angina. Clinical improvement including increase in neutrophils followed the administration of this substance.

2. While this clinical evidence leaves something to be desired, it is recognized that the difficulty in securing cases is real.

The Armour Laboratories was asked to make certain revision of its proposed advertising for the product and did so. The Council felt, however, that the evidence was not sufficient to warrant acceptance at this time and voted to hold consideration in abeyance pending the development of future corroborative evidence for the place of Yellow Bone Marrow Concentrate in the treatment of agranulocytosis, meanwhile authorizing publication of the foregoing preliminary report.

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

PAUL NICHOLAS LEECH, Secretary.

RACÉPHEDRINE HYDROCHLORIDE. — Racemic Ephedrine Hydrochloride. — *d-l*-Ephedrine Hydrochloride. — $C_{10}H_{15}ON.HCl$.

Action and Uses.—The same as those of l-ephedrine hydrochloride.

Dosage.—From 30 to 50 mg.

Racéphedrine hydrochloride (Synthetic racemic ephedrine hydrochloride) is a colorless, crystalline substance. The melting point of crystalline racéphedrine hydrochloride is 187-188 C. (microscopic heating stage). The solubility in water is 1 part of substance in 4 parts of water at 20 C; in alcohol, 1 part of substance in 25 parts of 95 per cent ethyl alcohol. The aqueous solution is neutral to litmus.

Weigh out, accurately, 0.2 Gm. of racéphedrine hydrochloride and transfer over phosphorus pentoxide in an Abderhalden dryer at 80 C., exhaust to 2 mm. of mercury vacuum and dry for five hours: the loss of moisture is not more than 2 per cent. Incinerate 0.2 Gm. of racéphedrine hydrochloride, accurately weighed, and previously dried to constant weight, as described: no residue remains. Dissolve approximately 0.5 Gm. in 20 cc. of water: the aqueous solution of racéphedrine hydrochloride does not show optical activity; the solution gives the test for chlorides, U. S. P. XI, page 449; on addition of ammonia water or sodium carbonate solution, no turbidity takes place. Slightly acidify 3 cc. of the solution with diluted hydrochloric acid (0.5 cc.): no precipitate occurs on the addition of barium chloride solution (0.5 cc.) *(sulfates)*.

Dissolve approximately 0.02 Gm. of racéphedrine hydrochloride in 1 cc. of concentrated sulfuric acid: no color is formed. To approximately 0.2 Gm. dissolved in 1 cc. of distilled water add 2 cc. of 20 per cent sodium hydroxide solution: oily drops are formed. Extract the milky turbid mixture twice with 25 cc. of ether: the (racéphedrine) base crystallizes out on slow evaporation of the ether; after recrystallization from ether and drying at room temperature over phosphorus pentoxide in a slight vacuum, the racéphedrine melts at 76 C.

Dissolve approximately 0.2 Gm. of racéphedrine in 8 cc. of distilled water; add 1 drop of 2 per cent copper sulfate solution and 1 cc. of 20 per cent sodium hydroxide solution: a purple color is developed which, on shaking with ether, is partially dissolved in the ether layer; evaporate the ether layer: a pinkish residue remains. Place a drop of a 5 per cent solution of racéphedrine hydrochloride on a microscopic slide and introduce a small solid particle of potassium oxalate at an edge of the drop: a crystalline precipitate immediately appears. The form of the crystals allows the making of distinction between optically active and racemic forms of ephedrine hydrochloride. The former gives bundles of needles and prisms; the latter, thin plates.

Transfer 0.5 Gm. of racéphedrine hydrochloride, accurately weighed and previously dried over sulfuric acid for five hours, to a separator. Add 10 cc. of distilled water and 5 cc. of ammonia solution. Extract with 6 portions of ether, using 25 cc., 20 cc., 15 cc., 15 cc. and 15 cc., respectively. Collect the extracts in a beaker; evaporate the ether on a water bath to about 5 cc.; add 10 cc. of alcohol, previously neutralized to bromthymol blue solution with 0.1 normal hydrochloric acid. Titrate the excess acid back with 0.1 normal sodium hydroxide: the racéphedrine (base) found is not less than 80 per cent nor more than 82.5 per cent of the weight of racéphedrine hydrochloride. (One cc. of 0.1 normal hydrochloric acid is equivalent to 0.0165 Gm. of racéphedrine.)

IMMUNE GLOBULIN (HUMAN) (See THE JOURNAL, Nov. 5, 1938, p. 1767).

National Drug Company, Philadelphia.

Immune Globulin (Human).—Prepared by the method of McKhann from fresh, healthy human placentas; the globulin is reprecipitated to reduce the content of other tissue proteins and hemoglobin. Merthiolate 1: 4,000 is added as a preservative. Each lot is tested for sterility by the method of the National Institute of Health. Marketed in 2 cc. and 10 cc. glass syringes with chromium steel needles for parenteral use.

RABIES VACCINE (See New and Nonofficial Remedies, 1938, p. 402).

Medical Arts Laboratory, Inc., Oklahoma City.

Rabies Vaccine (Killed Virus): Also marketed in packages of seven vials, each vial containing 2 cc.

NICOTINIC ACID (See THE JOURNAL, July 2, 1938, p. 27, and the Revised Supplement to N. N. R. 1938, p. 22).

Mead's Nicotinic Acid Tablets, 20 mg.

Prepared by Mead Johnson and Company, Evansville, Ind. No U. S. patent or trademark.

Nicotinic Acid-Abbott.—A brand of nicotinic acid-N. N. R.

Manufactured by the Abbott Laboratories, North Chicago, Ill. No U. S. patent or trademark.

Nicotinic Acid Tablets, 50 mg.-Abbott.
Nicotinic Acid Tablets, 100 mg.-Abbott.

STOVARSOL (See New and Nonofficial Remedies, 1938, p. 100).

The following dosage forms have been accepted:

Stovarsol Tablets, 0.1 Gm.
Stovarsol Tablets, 0.05 Gm.

ESTRONE-ABBOTT (See THE JOURNAL, Oct. 1, 1938, p. 1301, and Revised Supplement to New and Nonofficial Remedies 1938, p. 12).

The following dosage form has been accepted:

Ampoules Estrone, 0.5 mg. in oil, 1 cc.: Each cubic centimeter contains estrone 0.5 mg. (5,000 international units) in sesame oil.

IODEIKON (See New and Nonofficial Remedies, 1938, p. 218).

The following dosage form has been accepted:

Iodeikon Emulsion Powder-Abbott.—Iodeikon 33.34 per cent in a vehicle composed of malt sugar 37.30 per cent, powdered cocoa 18.30 per cent, tartaric acid 8.25 per cent, vanillin 2.20 per cent, saccharine 0.54 per cent and menthol 0.07 per cent.

Prepared by the Abbott Laboratories, North Chicago, Ill.

DIGITALIN, "GERMAN" (See New and Nonofficial Remedies, 1938, p. 191).

Hypodermic Tablets Digitalin (German, Pure, Merck), 0.00065 Gm.) 1/100 grain-Upjohn.

Prepared by The Upjohn Company, Kalamazoo, Mich. No U. S. patent or trademark.

OLD TUBERCULIN (See New and Nonofficial Remedies, 1938, p. 408).

Eli Lilly & Co., Indianapolis.

Tuberculin Ointment (Wolff)-Lilly.—A culture of human tubercle bacilli (H-37) of four weeks' growth in glycerin broth, sterilized, evaporated to one-fifteenth its original volume and triturated to a smooth mixture, to which 0.4 per cent of phenol is added as a preservative. It is proposed for use as a tuberculin test by the patch method. Marketed in packages of one 2 Gm. collapsible tube with a 2 Gm. control tube.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, APRIL 1, 1939

A NEW DIETARY FACTOR

Failure of nicotinic acid to prevent pellagra-like symptoms in rhesus monkeys, and the successful prevention of rhesus pellagra by a wholly unknown nutritional factor, recently reported by Day,[1] Langston [2] and others of the University of Arkansas, call attention to the possibility that there may be more than one etiologic type of pellagra. About three years ago the Arkansas biochemists placed monkeys on a presumably adequate diet containing all known vitamins. This diet consisted of a mixture of casein, polished rice, ground whole wheat, cod liver oil, ascorbic acid, salt mixture and sodium chloride. All monkeys fed this diet developed anemia, leukopenia, gingivitis, diarrhea, anorexia and loss of weight. The ulcerations of the gum were apparently identical with the typical oral lesions in human pellagra. Death invariably occurred in from one to three months.

Following the well confirmed successes of nicotinic acid in preventing black tongue in dogs, nutritional panmyelophthisis in rats and human pellagra, the Arkansas investigators tested the effects of the addition of nicotinic acid to their routine deficiency diet. From 10 to 50 mg. of nicotinic acid was added to the daily diet. All normal monkeys whose deficiency diet was thus supplemented with nicotinic acid developed the characteristic oral lesions and nutritional cytopenia, the condition terminating fatally in the same period as that shown by control monkeys receiving only the deficiency diet. The nicotinic acid had no demonstrable effect on the pellagra-like oral lesions in these animals. In later tests the Arkansas physiologists found that 1 mg. of riboflavin added to the daily diet will not prevent the development of pellagra in monkeys, nor will a combination of nicotinic acid, riboflavin and thiamin appreciably affect the course of this deficiency disease. If the daily deficiency diet is supplemented by 10 Gm. of dried brewers' yeast, however, or by 2 Gm. of liver extract, normal body growth and a normal blood picture are maintained over long periods.

They conclude from these results that monkeys require some factor contained in yeast or in liver extract in addition to the factors commonly recognized as part of the vitamin B complex. For this unknown nutritional factor they tentatively suggest the name "vitamin M." Attempts to isolate and identify this new antipellagra "vitamin" are now in progress in their laboratory.

1. Day, Paul L.; Langston, William C., and Darby, William J.: Proc. Soc. Exper. Biol. & Med. **38**: 860 (June) 1938.
2. Langston, William C.; Darby, William J.; Shukers, Carroll F., and Day, Paul L.: J. Exper. Med. **68**: 923 (Dec.) 1938.

THE TENTH PAN AMERICAN SANITARY CONFERENCE

The interest, enthusiasm and occasional criticism aroused by the eighth International Conference of American States at Lima, Peru, last December offer opportunity to point out that when effective Pan American cooperation in most matters was still a dream of statesmen and scholars it had already been achieved in the field of public health, largely under medical auspices. International cooperation of the American republics in this field began at the quarantine conference held in Washington in 1881. There Finlay first enunciated guardedly his hypothesis that the stegomyia mosquito was the vector of yellow fever, then causing one epidemic after another from the United States to Argentina and Chile. When finally this concept was confirmed in 1900 by the American army commission headed by Reed, control methods were revolutionized and yellow fever was eradicated from all its old foci at seaports.

The Pan American Sanitary Conferences [1] came into being as a result of the foresight of such physicians as Finlay himself, Wyman, Liceaga, Guiteras, Ulloa, Cruz and Moore. They were actually created by virtue of a resolution adopted by the second International Conference of American States in Mexico City (1901-1902). Permanent organization both of the conferences and of the Pan American Sanitary Bureau was effected at the first International Sanitary Conference of the American Republics in Washington in October 1902.

The aims pursued by the originators of these meetings are reflected in the remarks of President Theodore Roosevelt to the members of the second conference (1905):

> I believe that we on this hemisphere are going to teach all the world by an object lesson that separate nations can dwell together in absolute harmony and can unite in a common effort, as you are uniting here, for the betterment of the conditions affecting them all. In medical matters, in industrial, scientific, social, artistic matters, each of our countries has something to learn from the others, and I welcome you as colleagues and as teachers. Of course, I could not overstate the all-importance of the medical profession in modern life and, as it is now becoming, in modern international life. In the old days a plague that happened in one country was regarded as only concerning that country until it spread over into some other helpless nation to defend itself against it. Now we recognize that the stamping

1. Publications on the history and achievements of the Pan American Sanitary Conferences may be secured by addressing the Pan American Sanitary Bureau, Washington, D. C.

out of disease, the warfare against unhygienic conditions, must be done by the organized effort of the medical profession of all the countries joined together.[2]

At the tenth conference Dr. Hugh S. Cumming said that each of these conferences, held at different capitals of American republics, has left behind it a series of concrete accomplishments which have inevitably advanced the great cause which brought about their organization, namely the improvement of public health in all the American republics through international cooperation so far as this is practicable and advisable. The first Pan American Sanitary Conference (1902) set the standard for the succeeding ones and established the Pan American Sanitary Bureau; the second (1905) formulated the Washington Convention, which was in effect the first Pan American Sanitary Code; the third (1907), fourth (1909-1910) and fifth (1911) consolidated the territory gained and opened new paths for the future; the sixth (1920) provided for the publication of the *Boletín,* which has come to be one of the most important as well as one of the best known activities of the Sanitary Bureau; the seventh (1924) approved the Pan American Sanitary Code, a model international health charter enjoying the distinction of being the first Pan American treaty unanimously ratified by all the republics and of serving as a standard for subsequent international agreements on the same subject; the eighth (1927) and ninth (1934) charted new courses and expanded the functions of the Pan American Sanitary Bureau to the magnitude they have reached. The tenth maintained in full this splendid tradition, imposing new duties on the bureau and recommending new ways of Pan American cooperation.

The problems faced by international public health workers and discussed by them at sanitary conferences have been of pressing importance since the earliest days. Yellow fever was a grave problem confronting the 1881 conference; it was still a problem at the 1938 conference because, while stringent control measures have practically eliminated it from ports and cities and from the danger of maritime transmission, the presence of jungle yellow fever in certain areas combined with the increase of air travel renders this ancient enemy still a possible menace. As the great international scourges of former years—cholera, plague, smallpox, typhus—are brought under control, the importance of other problems comes to light. Malaria, venereal diseases, intestinal parasites, tuberculosis, leprosy, water supply and sewage disposal, milk supply, nutrition, mother and child welfare, social insurance, bacteriologic and biologic standards and similar matters now appear on the programs of the Pan American Sanitary Conferences and the Pan American Conferences of National Directors of Health, the latter also held under the auspices of the bureau.

The tenth Pan American Sanitary Conference was not only successful but also made history along several lines: through the completeness of its program; through the size and technical character of the delegations attending; through the presence for the first time of women delegates; through the extensive scientific reports submitted there both by the various countries and by the Rockefeller Foundation and the Pan American Sanitary Bureau, which permitted the formation of an exact idea of the developments which have taken place since the previous meeting and the progress already achieved or now under consideration;[3] through the enthusiasm which inspired those in attendance; through a health exhibition which so far had never been a feature of these assemblies; through the unanimity of sentiment on the part of the representatives of Pan American public health in the face of questions considered, some of them of the greatest importance; and through the sensible and very practical judgment which, as a rule, guided the discussions.[4] Only one republic (Paraguay) was unable to send representatives. The directors of health of the majority of the twenty-one republics were present, and with them professors of hygiene and experts on such varied themes as bacteriology and biology, venereology, dietetics, tropical medicine, pediatrics and puericulture, tuberculosis, maritime and aerial quarantine and, finally, public health teaching and health administration in general.

The Pan American Sanitary Bureau,[5] which has its headquarters in Washington, D. C., has been a constantly increasing force in international public health since its reorganization in 1920. It maintains traveling representatives, including physicians and sanitary engineers, who visit the various republics from time to time at the request of the national authorities to lend their advice and assistance in dealing with public health problems such as health administration, plague, water supply and sewage disposal, and mosquito surveys; it acts as a consulting agency, publishes a monthly bulletin of public health information with articles in the four official languages (Spanish, French, Portuguese and English), with a circulation of about 9,000 in Latin America, as well as weekly statistical reports and transactions of Pan American Sanitary Conferences, and has a library including more than 400 medical and public health journals from Latin America. The tenth Pan American Sanitary Conference approved several amendments to the constitution of the bureau, one of them recommending an increase in the maintenance quotas to permit the expansion of activities recommended by international public health interest as well as by the Conference for the Maintenance of Peace, Buenos Aires, 1936, and previous sanitary conferences. This increase

2. Transactions, Second International Sanitary Conference, Washington, 1905, p. 223.

3. Boletín de la Oficina Sanitaria Panamericana, January 1939, p. 29, February, p. 112.

4. See resolutions in the Boletín, January 1939, p. 11.

5. Cumming, Hugh S.: Development of International Cooperation Among Health Authorities of the American Republics, Am. J. Pub. Health **28:** 1193 (Oct.) 1938; M. Surgeon **83:** 1 (July) 1938; Report to Tenth Pan American Sanitary Conference; Annual Report of the Director, Pan American Sanitary Bureau, 1938.

was also recommended by the eighth International Conference of American States in December, and several countries have already ratified the proposal.

The director of the Pan American Sanitary Bureau, Dr. Hugh S. Cumming, Surgeon General, Retired, U. S. Public Health Service, who has served as director of the bureau since 1920, was present at the conference and for the fourth time was reelected to that position, heading the directing council, each member of which belongs to a different republic. The eleventh Pan American Sanitary Conference is scheduled to be held in Rio de Janeiro, Brazil, in about four years and will be preceded by the fourth Pan American Conference of National Directors of Health, to be held in Washington in 1940.

The American Medical Association lent effective and practical support to this movement through the publication of its Spanish Edition for a period of ten years (1918-1928).[6] Congress has now under consideration the recommendations made by an interdepartmental committee appointed by the President for extending Pan American cooperation, especially in cultural fields, including medicine and public health. Such cooperation does much to establish good will and to overcome prejudices founded on ignorance.

Current Comment

PREVENTION OF SERUM SICKNESS

The "induced erythema" reported by Voss and Hundt[1] of children's clinic in Heidelberg, Germany, is interesting. Blood was drawn from patients convalescent after the serum sickness which in their hands so often follows routine administration of diphtheria antitoxin. From 1 to 10 cc. of the resulting convalescent human serum was injected intravenously into diphtheria patients from one hour to eight days after routine administration of antidiphtheritic horse serum. The German investigators report that if the intravenous convalescent serum injection is made within the first twenty-four hours allergic symptoms are not noted. If the injection is delayed till the third or fourth day, however, an "inverse anaphylactic reaction" is produced, a generalized erythema, which usually disappears within a few hours. Delayed until the eighth day, i. e. until the end of the usual incubation period of spontaneous serum sickness, the "inverse anaphylactic reaction" is of "shocklike intensity." Following the induced erythema, the patients are completely desensitized to horse proteins. Spontaneous serum sickness does not develop in these desensitized children after completion of the usual incubation period. These results suggest that intravenous injection of convalescent human serum can be safely made on the third day following administration of diphtheria antitoxin and, thus given, may serve as a successful method of preventing serum sickness. The nature of the presumptive "secondary antibody" in the convalescent human serum, however, has not yet been determined. Fatalities have not thus far been reported from German hospitals as a result of this clinical research.

SYPHILIS IN NORTH CAROLINA

According to a recent press release from the North Carolina State Board of Health, 4,000 new cases of syphilis are being reported from that state each month as compared with 6,000 annually before the control campaign was launched. It is concluded therefore that the estimate of 300,000 cases of syphilis in the state made by the survey method was probably not exaggerated. Since the population of North Carolina is approximately 3,500,000, about 9 per cent of all the people in the state on the basis of this statement are syphilitic. Apparently also according to this release 48,000 new cases of syphilis develop each year and are actually reported. Irrefutable evidence of this startling conclusion should be offered before it is made the platform on which to plead for additional federal funds.

DANGERS OF PREGNANCY AFTER LONG INTERVAL

The impression that women who have long intervals between pregnancies are especially prone to obstetric difficulties and complications induced Ballard[1] to study 100 unselected pregnant women who had not had a pregnancy for ten or more years. Ninety per cent of the cases were from the clinic group, and the other 10 per cent from the private practices of the clinic staff. There were fifty-six white and forty-four colored patients, approximately the reverse ratio of the white and colored patients on the service. Eighty-five were between 26 and 40 years of age and forty were between 31 and 35. The average interval between pregnancies was 12.38 years and in 80 per cent the elapsed period between the present and previous pregnancies was between ten and fourteen years. Two patients, however, reported intervals of twenty-one years. Altogether, these women had experienced 207 previous pregnancies, fifty had one prior pregnancy each and one woman had had nine previous pregnancies. Eighty-seven patients delivered full-term living children and there were twelve deliveries of premature children, including one set of twins. There was one therapeutic abortion for hyperemesis gravidarum, and one premature stillbirth attributed to prolapse of the uterus and acute gonorrheal infection. The average duration of labor of ninety-three patients who were allowed to go into labor was slightly over twelve hours. Sixty-two patients had labor of ten hours or less, while twelve had twenty-four hours or more of labor. There were sixty-eight normal spontaneous deliveries, six cesarean sections and seventeen forceps deliveries. The uncorrected fetal mortality was 7 per cent, and one mother died of embolism. It was also concluded that white women are more apt to have long intervals between pregnancies than colored women;

6. The former editor of the Spanish edition, Dr. A. A. Moll, is secretary of the Pan American Sanitary Bureau and editor of its bulletin.

1. Voss, A. E., and Hundt, O.: Ztschr. f. Immunitätsforsch. **94**: 281 (Nov.) 1938.

1. Ballard, Margaret B.: A Study of 100 Pregnancies Occurring Ten or More Years After the Last Previous Pregnancy, Bull. School of Medicine University of Maryland **23**: 63 (Oct.) 1938.

there is no difference between the longer and shorter intervals as to labor complications; the number of full term living children is slightly increased; the average duration of labor is increased about one fourth; operative deliveries are increased more than three times; the ratio of male to female babies is increased over the average, and the complications of toxemia, cardiovascular disease, placenta praevia, abruptio placentae, prolonged labor, uterine inertia, cervical dystocia and secondary anemia are definitely increased. She concludes, therefore, that the woman who has not had a pregnancy for ten years or more should receive the best antepartum care and should be delivered in a hospital and under expert obstetric supervision.

ALLERGIC CAPILLARY IMPERMEABILITY

The recent demonstration that in certain allergic conditions endothelial permeability is so reduced as to prevent the mechanical removal of colloidal irritants from local tissues introduces unsuspected complexity in theories of allergy. Direct microscopic study of capillary permeability was made possible by the synthesis of numerous relatively nontoxic colloidal dyes of known molecular size. If these dyes are injected intravenously into laboratory animals the rate of diffusion through the capillary endothelium is readily followed microscopically through a transparent window inserted in the skin or macroscopically by placing a drop of liquid petrolatum on the skin so as to make it semitransparent. Joyner and Sabin [1] of the Rockefeller Institute applied the latter technic to a study of the rate of outward diffusion of dyes or dye removal by capillary absorption after endermic injection. They found that if 0.025 cc. of a 2.5 per cent solution of pontamine sky blue, for example, is injected intracutaneously into a normal guinea pig the injected dye rapidly spreads outward through the regional lymphatics and interstitial tissue spaces. Rapid absorption by the local capillaries evidently takes place, since the color is soon demonstrable on all mucous surfaces. If the same volume of dye solution is injected endermically into a guinea pig during the allergic stage of experimental tuberculosis, however, this rapid outward diffusion and capillary absorption do not take place. The blue remains sharply localized for several hours and the mucous surfaces are not colored. The rate of local lymph formation is apparently markedly reduced. A similar though less pronounced reduction in endothelial permeability was demonstrated in guinea pigs during the allergic stage of streptococcic infection. During the late nonallergic or moribund stage of experimental tuberculosis the injected dye spreads outward more rapidly than in normal controls. There would seem therefore to be a terminal breakdown in the acquired allergic capillary impermeability. That injected antigens are localized at the site of injection in allergic animals was first emphasized by Opie,[2] who interpreted this localization as due solely to specific antibody reactions. The nonspecific mechanical factor demonstrated by the Rockefeller Institute physiologists, therefore, may lead to a reinterpretation of this conclusion. The strict localization of nonspecific irritants at the site of injection may conceivably lead to misleading local diagnostic inflammatory reactions.

1. Joyner, A. L., and Sabin, F. R.: J. Exper. Med. **68**: 325 (Sept.) 1938.
2. Opie, Eugene L.: J. Immunol. **17**: 329 (Oct.) 1929.

RIBOFLAVIN DEFICIENCY IN MAN

Sebrell and Butler,[1] by means of a daily ration similar to that used by Goldberger and Tanner, succeeded in producing a cheilosis in ten of eighteen women in from ninety-four to 130 days after the beginning of the experiment. The diet consisted of cornmeal, cowpeas, lard, casein, flour, white bread, calcium carbonate, tomato juice, cod liver oil, syrup, and syrup of iodide of iron. On the eighty-sixth day of the experiment all were started on a weekly supplement of 30 mg. of crystalline ascorbic acid and 3.3 mg. of crystalline thiamin chloride. The lesions began as a pallor of the mucosa of the lip in the angles of the mouth without involvement of the buccal mucosa. Maceration and superficial transverse fissures appeared within a few days. These lesions resembled those described as perlèche. Four of the ten women with cheilosis were treated with daily doses of 1 or 2 mg. of synthetic crystalline riboflavin for from three to ten days, after which the dose was changed to 0.025 mg. per kilogram of body weight. All lesions completely disappeared after five, six, twenty and forty-seven days of treatment respectively. Another four women with cheilosis were treated for five days with 100 mg. of nicotinic acid daily. At the end of five days the lesions in all four were definitely worse and treatment with riboflavin was started. The lesions completely disappeared in three of the women after twelve, thirteen and twenty-four days of treatment but were so much more serious in the fourth that after forty-nine days the daily dose of riboflavin was increased to 0.05 mg. per kilogram of body weight. Thereafter the symptoms receded rapidly. One woman was treated with 100 mg. of nicotinic acid for forty-three days, at the end of which time, the lesions still being present, riboflavin was added to the diet followed by complete healing within ten days. The remaining woman developed the typical skin lesions of pellagra beginning thirty-six days after the experiment began and they were allowed to progress for forty days longer. After thirty days on 30 mg. of nicotinic acid daily these lesions were completely healed, although the cheilosis remained twenty-one days after the skin lesions of pellagra had completely healed and was not controlled until after riboflavin had been administered. These interesting observations, while preliminary in nature, indicate that a specific clinical syndrome can be experimentally produced and that the early developing cheilosis can be alleviated by the administration of small doses of crystalline synthetic riboflavin but not by nicotinic acid. The authors therefore believe that the condition may be considered a manifestation of riboflavin deficiency and suggest that the term ariboflavinosis be added to the nomenclature of vitamin deficiency diseases as a designation for the clinical condition due to deficiency of this vitamin.

1. Sebrell, W. H., and Butler, R. E.: Riboflavin Deficiency in Man, Pub. Health Rep. **53**: 2282 (Dec. 30) 1938.

ORGANIZATION SECTION

GRADUATE MEDICAL EDUCATION

A PROGRESS REPORT OF THE FIELD STUDY ON GRADUATE MEDICAL EDUCATION IN THE UNITED STATES BEING CONDUCTED BY THE COUNCIL ON MEDICAL EDUCATION AND HOSPITALS

PENNSYLVANIA

The Medical Society of the State of Pennsylvania is committed to its responsibilities to keep its members who live away from medical centers abreast of the progress of medicine. In 1933, when Dr. Donald Guthrie was president of the state society, postgraduate seminars were planned by the society and conducted by instructors of the medical schools in Pennsylvania. County medical societies desiring to organize classes of not less than twenty-five physicians communicated with the chairman of the committee on postgraduate education. In 1934 this committee consisted of six members with the former president of the state society as chairman, and he continues to act in this capacity.

Physicians who registered for the seminars indicated their preference of subjects for discussion. A series of six seminars given one day each week for six consecutive weeks was the usual plan. A registration fee of $10 was charged, which included the cost of a luncheon or dinner. Each instructor was allowed an honorarium of $25 as well as railroad fare. The state medical society agreed to absorb unavoidable deficits. Each county society which elected the plan was responsible for local organization, registration and other arrangements.

During 1934 six postgraduate seminars were held in medicine, gynecology and obstetrics, and roentgenology. In addition a course in physical therapy was presented over five successive days. Total registration for these seminars was 592. Six counties participated during the first year.

After this preliminary experience a definite procedure was established for securing the interest of county medical societies throughout the state. It was recommended that a seminar committee be appointed in each county society and also a subcommittee responsible for assigning subjects to teachers, for financial arrangements and for other local particulars. The state society committee listed the names of several hundred faculty members of the medical schools in Pennsylvania who were available for extension teaching. From this list county societies selected appropriate subjects and instructors. It was recommended that each seminar consist of three parts: a clinical ward class, didactic instruction and round table discussion. When more than twenty-five physicians subscribed for a course, it was possible to extend the series for more than six seminars. Hospitals were used as meeting places whenever possible. Graduate programs were not designed to take the place of regular county medical society meetings.

In 1935 approximately 640 practicing physicians participated in various seminars held throughout the state. In every section the program proved to be successful and no expense was incurred for the state medical society.

In 1936 the Pennsylvania State Department of Health offered, in cooperation with the state medical society, postgraduate institutes in obstetrics and pediatrics for practicing physicians. The state medical society's commission on maternal welfare and committee on pediatric education cooperated with the health department in making arrangements. Institutes in obstetrics and pediatrics were organized in forty-five towns throughout the state. These were financed with federal funds, and honorariums of $50 were paid instructors from the medical schools of Pennsylvania, in addition to travel expenses. The choice of subjects and speakers and many of the details connected with this program were arranged by the health department, which notified physicians that full day sessions would be held with three speakers on obstetrics or three on pediatrics. Lectures were mimeographed in pamphlet form and distributed to physicians who had enrolled. Three institutes were given in pediatrics and three in obstetrics. No registration fees were charged.

In 1937 the educational program in obstetrics and pediatrics was continued in several sections of the state. The general plan and arrangements for instruction were as noted for 1936, with the exception that only county medical societies which requested the programs were included, and six lectures were given on one day on both subjects. Approximately 300 practicing physicians received some graduate training in pediatrics and obstetrics during the year.

The chairman of the state society's commission on maternal welfare, Dr. James S. Taylor, has attempted during the past year to determine the number of hospitals in the state in which 500 or more obstetric patients are delivered annually. In hospitals with adequate clinical teaching material, conferences of members of the staff with other practicing physicians review maternal mortality statistics and other related data. These conferences are open to all physicians in the community and are designed for the purpose of determining the cause of each maternal and infant death. There are now eight centers throughout the state where such conferences are held. Obstetric conferences were begun in Philadelphia approximately three years ago, where meetings have been held once each month.

In December 1937 Dr. Thomas H. A. Stites was engaged as field secretary for the committee on graduate education of the state medical society. He visits officers of each county medical society in order to stimulate the interest of practicing physicians in graduate medical education, attends regular meetings of each county medical society and discusses the state society's program with members of local committees concerned with medical education. Whenever a county medical society does not have a sufficient number of members to warrant engaging instructors to give a series of lectures and clinics, it is urged to join with another county society in a cooperative program. When a county has shown sufficient interest in graduate education to organize a course, all further details concerning it are left entirely to local physicians.

Since the work of the field organizer began, courses have been given in twenty counties of the state outside of Allegheny, Dauphin and Philadelphia counties. Approximately 857 practicing physicians have participated and about 300 more in seven other sections of the state are planning to attend graduate seminars this year. Subjects that have been demanded most frequently are cardiology, obstetrics, pediatrics, cardiovascular-renal disease, neurology, gastro-enterology, internal medicine, syphilis, allergy, dermatology and diabetes. The graduate program has been largely self supporting and there have been few deficits for the state medical society.

The Medical Society of the State of Pennsylvania supports a library with a librarian in attendance in the building of the society at Harrisburg. An exchange has been set up with other state medical societies, so that journals and proceedings may be obtained as well as reprints for distribution to physicians practicing throughout the state. Approximately 60,000 reprints are available. For the year that ended in August 1938 there was a total of 319 loan packages distributed to physicians.

The Philadelphia County Medical Society organized its first postgraduate institute in 1936. Since then one has been held annually in a local hotel during March or April. Dr. Rufus S. Reeves is chairman of the committee on postgraduate institute. Every year one or two subjects are chosen for complete

discussion by instructors of the medical schools of Philadelphia and invited speakers. As many as seventy speakers sometimes participate in one institute. Cardiovascular-renal disease, diseases of the chest and respiratory tract and diseases of the digestive tract have been considered. The next annual program will be devoted to the blood dyscrasias and metabolic diseases. Scientific and technical exhibits are a part of the institute.

The institute was attended in 1936 by 564 individuals from thirteen states, in 1937 by 715 from seventeen states and two foreign countries, and in 1938 by 1,787 from thirty-six states and eleven foreign countries. A registration fee is charged, excepting for members of the Philadelphia county society; 802 of the 2,360 members of the society registered in 1938. There were 107 other Pennsylvania physicians who attended.

A library is maintained by the Philadelphia County Medical Society in its building. This library, which now contains 3,549 volumes and seventy-seven periodicals, has a librarian in attendance and is available not only to physicians practicing in Philadelphia but also to graduate students, medical students and nurses as well. During 1937 and 1938 there were 2,545 visitors.

In 1926 the Allegheny County Medical Society started a series of graduate courses of the extension type, patterned after those of the Kings County Medical Society of Brooklyn. A committee on graduate education consisting of five members was appointed to arrange and supervise graduate courses, to determine the fee for each course, to prepare and distribute announcements with the aid of the society's executive secretary and to make these activities self supporting. Allegheny's program for graduate medical education has been described by Dr. W. H. Robinson in the *American Medical Association Bulletin* (**29**:20 [Feb.] 1934).

Intensive courses were conducted also in which clinical material available in Pittsburgh was used, so that practicing physicians in the vicinity might have the opportunity to learn by actual experience and demonstration. Subjects which have been presented include neurology, pediatrics, roentgenology, ophthalmology, obstetrics, urology, pharmacology, physical therapy, gynecology and various aspects of internal medicine. From 1926 to 1934 six series of from six to eight courses each were given in local hospitals with a total registration of 314.

The Committee on Graduate Education of the Allegheny County Medical Society now consists of six members, two from the University of Pittsburgh School of Medicine and four from the county medical society, as well as two ex officio members. Since 1934 fifty or more practicing physicians have registered each year for graduate training. In 1938 sixty registered for the course of instruction in pneumonia. Courses which have proved most popular are pediatrics, ophthalmology, proctology, gynecology, obstetrics, physical therapeutics and gastro-enterology. Whenever possible, bedside teaching is emphasized and practicing physicians are given the opportunity to examine patients. Instructors are selected from the membership of the county society. Approximately 2,500 announcements are mailed to physicians in western Pennsylvania.

A cooperative postgraduate course in industrial hygiene was given at the University of Pittsburgh School of Medicine in October 1938 under the auspices of the county society and the medical school's department of industrial hygiene. Dr. T. Lyle Hazlett, director of the course, was assisted by five lecturers and other guest speakers. Subjects included traumatic surgery, toxicology of solvents, physiologic effects of industrial gases and metals, dermatoses and occupational health hazards. Three industrial plants in the vicinity of Pittsburgh were studied. There were thirty-three physicians registered, representing nineteen industries. A fee of $50 was charged. A mimeographed copy of the lectures was provided for each registrant.

During 1939 courses will be offered by the Allegheny county society in neurosurgery, clinical electrocardiography, proctology, gynecology, diseases of the ear, nose and throat, endocrinology and genito-urinary disease. Registration is limited in some courses. The registration fee for each is $10. Illustrated lectures, clinical demonstrations and, in some, laboratory instruction are included.

The Harrisburg Academy of Medicine has held a postgraduate medical assembly in Harrisburg each May for the past five years. The membership of the academy is approximately 160, and the attendance at each annual meeting varies from 150 to 500. Usually six guest speakers conduct the one day program. They are provided with travel expenses. A registration fee of $1 is charged each physician, and a copy of the proceedings of the medical assembly is given each registrant. Subjects of current interest are selected. In twelve sections of the state outside of the metropolitan areas similar one day graduate programs are provided.

The University of Pennsylvania Graduate School of Medicine, in addition to long courses in basic clinical studies, offers short personal courses in several subjects. These include cardiology, parasitology and tropical medicine, allergy and diabetes mellitus for practicing physicians, and neuropathology, clinical psychiatry, clinical biologic neurology and psychiatry, slit lamp microscopy and ophthalmic pathology for special students. Each course has limited registration and a fee. The course in clinical biologic neurology and psychiatry is designed for the members of the medical staffs of mental hospitals in Pennsylvania. It was given during October, November and December 1938. Registration was limited to ten.

During July 1938 the Pennsylvania Hospital of Philadelphia conducted a graduate course which included clinics, ward rounds, lectures, demonstrations and discussions on the various services of the hospital. A registration fee of $150 was charged, which allowed members of the staff who gave instruction honorariums of $5 or $10.

During 1938 one week of intensive courses in syphilis was given in Philadelphia for practicing physicians, in cooperation with the Pennsylvania State Department of Health. Facilities of the Hospital of the University of Pennsylvania and of the Pennsylvania Hospital were used. Discussions of the pathogenesis and laboratory and clinical aspects of syphilis, technic and interpretation of treatment, and methods of controlling the disease were included.

The Mercy Hospital, Philadelphia, has given a five day series of lectures each April since 1933. The series is designed for Negro physicians, dentists, medical students and graduate nurses. In April 1938 such subjects as pediatrics, neurology, obstetrics, otology, odontology, syphilis, otolaryngology and a symposium on diabetes were included. Members of the Philadelphia County Medical Society assist in the program each year. At the last session there were approximately sixty registrants.

The Pennsylvania Tuberculosis Society is cooperating with the Medical Society of the State of Pennsylvania in an effort to develop an organized program for continuing the education of the profession and of the public in tuberculosis. Tuberculosis committees are being organized in county medical societies throughout the state. A physician is provided by the tuberculosis association to visit county medical societies to discuss laboratory tests and the clinical aspects of the disease. A motion picture sound film on "Diagnostic Procedures in Tuberculosis" has been utilized by medical societies in several sections of the state. Scholarships are offered to physicians for graduate study in tuberculosis.

Of the 13,205 physicians in the state, 9,040 are members of the Medical Society of the State of Pennsylvania. The society is notably generous in its policy of providing, without cost to its component societies, speakers representing its various disease control committees, such as cancer, pneumonia, diabetes, appendicitis, syphilis and maternal mortality.

STATE MEDICINE IN WASHINGTON

The Bellingham Eagles Lodge in the state of Washington has announced its intention to undertake a campaign for a state medicine act involving the "passage of a law providing medical treatment for citizens of the state at state expense." The Bulletin of the King County Medical Society for June 6, 1938, expresses the opinion that:

> While it is doubtful if the type of medical service which has so long been sponsored by the Eagles' organization will ever be in very wide demand, nevertheless, this movement on the part of this one organized group should be watched carefully.

THE IMPORTANCE OF POSTGRADUATE MEDICAL EDUCATION

Abridgment of an address read by George Morris Piersol, M.D., Philadelphia, at the ninetieth anniversary of the Philadelphia County Medical Society, Jan. 27, 1939.

It is eminently fitting that we should direct our attention to the question of postgraduate medical education on this, the ninetieth, anniversary of the Philadelphia County Medical Society. Long aware of the importance of postgraduate study, our society has been a pioneer in this field of activity, which at present is engaging the interest of medical educators and medical societies throughout this country. The practical problem which is an outstanding challenge to the medical profession and medical education today is how to devise effective methods which will afford practicing physicians the opportunities for adequate postgraduate study and, having provided such facilities, to induce physicians to utilize them. In this way and in this way alone can we hope to make available to the people of this country the ever increasing benefits of modern medical knowledge.

Without legislative coercion or even the advice of economists, the various medical groups, on their own initiative, have set up properly constitutcd boards for the certification of specialists. This movement had its inception in such highly specialized groups as the ophthalmologists, the otolaryngologists and the neuropsychiatrists and within the last few years has been extended so as to embrace all clinical subdivisions of medicine, including now the internists and the general surgeons. The requirements laid down by these certifying boards are so exacting that those who seek special certification must present satisfactory evidence of adequate training in the medical sciences as well as in their particular field.

Weekly Roster and Medical Digest **34**: 781-783 (Feb. 11) 1939.

In the past there has been a tendency to regard postgraduate medical education as something detached and apart from the broad question of medical training. From an educational point of view the different phases in the training of a physician should be looked on as a coordinated whole. Every step in the sequence of a medical education, premedical studies, the medical school, the years in a hospital as an intern and later as a resident or fellow, on through the period of general practice and postgraduate training, leading in some instances to specialism, should have as its objective one underlying and dominant aim, namely the proper and continued training of physicians well qualified to cope successfully with the health needs of the country. The more widespread such a concept of medical education becomes and the more uniformly such a program is adopted, the greater will be the improvement in the quality of medical service furnished by us. When, as the result of further progress in all aspects of medical education, the medical care of the people of this country is placed on a more satisfactory and efficient basis, many of the criticisms that are sometimes leveled at the medical profession will be silenced.

It is important for a society such as ours, which rightfully undertakes to guide and influence medical thought, to be ever mindful that the basic factor underlying continued confidence in the medical profession is education sufficiently broad in scope to include graduate as well as undergraduate training. Therefore in developing an adequate educational program every consideration should be given to postgraduate medical education, opportunities for which should be made readily available to the practicing physician through the well organized efforts of medical schools, hospitals and medical societies.

OFFICIAL NOTES

ADDRESSES BY OFFICIAL STAFF

DR. MORRIS FISHBEIN:

April 1—University of Illinois Students, Y. M. C. A., Chicago.
April 2—Phi Delta Epsilon, Knickerbocker Hotel, Chicago.
April 3—Vanderbilt University School of Medicine, Nashville, Tenn.
April 4—Nashville Academy of Medicine, Nashville, Tenn.
April 12—Columbia University, New York.
April 13—Princeton University, Princeton, N. J.
April 14—Yale Political Union, New Haven, Conn.
April 15—American Association for Social Security, New York.
April 15—Consumer Institute, Scarsdale, N. Y.
April 16—Phi Delta Epsilon, Cleveland.
April 18—Chicago Dental Society, Chicago.
April 19—Foreman's Club, Dayton, Ohio.
April 21—Virginia Medical Society, Richmond, Va.
April 23—Frances Shimer Junior College, Mount Carroll, Ill.
April 25—Sight Saving Council, Cleveland.
April 25—Western Reserve University Medical School, Cleveland.

MR. JACK LAUX:

April 26—Temple Isaiah Israel Seniors Forum, Chicago.

DR. R. G. LELAND:

April 6—Women's Bar Association of Illinois, Chicago.
April 14—Seventh Councilor District Medical Society Meeting, Williamsport, Pa.
April 17—Garfield Park Business Men's Association, Chicago.

DR. W. W. BAUER:

April 1—Tenth District Ohio Field Army, Columbus, Ohio.
April 5—Woman's Club, Charleston, W. Va.
April 11—Huntington College, Montgomery, Ala.
April 12—Federation of Women's Clubs, Dothan, Ala.
April 13—Polytechnic Institute, Auburn, Ala.
April 20—Lions Club, Chicago.
April 24, 25—Conference State and Territorial Health Officers and Officers of Public Health Service, Washington, D. C.

DR. PAUL A. TESCHNER:

April 2—Woman's Auxiliary, Will-Grundy County Medical Society, Joliet, Ill.
April 12—Vocational Conference, DeKalb, Ill.
April 12—Sixth Street Parent-Teacher Association, Geneva.
April 17—Delano School Parent-Teacher Association, Chicago.
April 18—Indiana Tuberculosis Association, Indianapolis.

RADIO BROADCASTS

The radio broadcasts by the American Medical Association and the National Broadcasting Company, under the title Your Health, continue as previously announced each Wednesday over the Blue network of the National Broadcasting Company at 2 p. m. eastern standard time (1 p. m. central standard time, 12 noon mountain time, 11 a. m. Pacific time).

Changes in this time will be necessary to take into consideration daylight saving time. Announcement of this change will appear in advance in THE JOURNAL. Owing to network conflicts the Chicago broadcast will not occur at 1 p. m. on Wednesday but there will be a rebroadcast from a recording over Station WENR at 8 o'clock each Monday evening. The program broadcast each Monday will be identical with the network program of the preceding Wednesday.

It has been necessary to curtail the length of the series by omitting the last two programs, which would have been broadcast June 14 and June 21. The series, therefore, will end with the broadcast scheduled for June 7.

The next three programs to be broadcast, together with their dates and their topics, are as follows:

April 5. Don't Believe Everything!
April 12. Learning to Live.
April 19. "Accidents Don't Just Happen—"

MEDICAL LEGISLATION

MEDICAL BILLS IN CONGRESS

Change in Status.—S. 795 has been reported to the Senate, without amendment, with a recommendation that it pass, proposing to authorize an appropriation of $11,580,000 annually to enable each state to establish, extend and improve services for educating children who are crippled, blind, partially seeing, deaf, hard of hearing, defective in speech, cardiopathic, tuberculous or otherwise physically handicapped, and who for their education require an expenditure of money in excess of the cost of educating physically normal children.

Bills Introduced.—S. 1843, introduced by Senator Bailey, North Carolina, contemplates the assignment of medical officers of the Public Health Service for duty on vessels of the Coast and Geodetic Survey and provides that all commissioned officers, ships' officers and members of the crews of the vessels of the United States Coast and Geodetic Survey, including those on shore duty and those on detached duty, whether on active duty or retired, and all dependent members of families of such personnel shall be entitled to medical, surgical and dental treatment and hospitalization by the Public Health Service in the same manner and to the same extent as are now or may hereafter be provided by law and regulations for officers and enlisted men of the United States Coast Guard and their dependents. S. 1899, introduced by Senator Harrison, Mississippi, provides that there shall be in the Public Health Service a commissioned medical officer to be known as the Assistant to the Surgeon General and who shall perform such duties as the Surgeon General may prescribe and shall act as Surgeon General during the absence or disability of the Surgeon General. The Assistant to the Surgeon General, while serving as assistant, shall have, it is proposed, a rank in the Public Health Service which shall correspond to that held by a brigadier general in the United States Army. H. R. 5026, introduced by Representative Reece, Tennessee, proposes that all acts conferring compensation and hospitalization benefits on veterans of the World War shall be extended to include veterans who served on the Mexican border as members of the Regular Army or National Guard from June 1916 to April 1917 and who received honorable discharges. H. R. 5038, introduced by Representative Terry, Arkansas, proposes, among other things, to authorize an annual federal appropriation of such amount as may be necessary to enable each state to furnish financial assistance to needy incapacitated individuals.

DISTRICT OF COLUMBIA

H. R. 5221, introduced by Representative Bolles, Wisconsin, provides that retired members of the police and fire departments of the District of Columbia shall receive necessary medical or surgical services, medicines and hospitalization for illnesses or disabilities reasonably calculated to be the outgrowth of injuries received or disease contracted in line of previous active duty. H. R. 5238, introduced by Representative Nichols, Oklahoma, proposes to regulate the practice of optometry in the District of Columbia. The practice of optometry is defined to be the "application of optical principles through the use of mechanical methods and devices in the examination of the human eye for the purpose of ascertaining visual defects, and the determination of proper lenses for the aid and relief thereof."

STATE MEDICAL LEGISLATION

Illinois

Bills Introduced.—S. 241 proposes to limit licensure in the healing arts to citizens of the United States. H. 498 proposes that whenever in a civil or criminal proceeding issues arise on which the court deems expert evidence desirable, the court may, on the request of either party to the proceeding, appoint one or more experts, not exceeding three on an issue, to testify at the trial. Either party to the proceeding, however, may call expert witnesses provided reasonable notice is given the adverse party of the name and address of the experts to be called.

Michigan

Bills Passed.—The following bills passed the house March 23: H. 145, proposing to authorize the organization of corporations to operate nonprofit hospital service plans whereby hospital service may be provided by any hospital or group of hospitals with which such corporations have contracts to such of the public as become subscribers to the plans entitling each subscriber to stated hospital care; and H. 215, proposing to authorize the organization of corporations to establish, maintain and operate nonprofit medical care plans, whereby medical care is provided at the expense of the corporation to such persons or groups of persons of low income as become subscribers to such plans under contract which entitle each such subscriber to definite medical and surgical care, appliances and supplies, by licensed physicians in their offices, in hospitals and in the home.

Minnesota

Bill Passed.—H. 853 passed the house March 22, proposing to prohibit, except on the written prescription of a licensed physician, dentist or veterinarian, the retail sale or distribution of barbital, veronal, propanol, ipral, dial, neonal, sandoptal, amytal, phenobarbital, phanodorn, noctal, allonal, medinal or any preparation, mixture or other substance containing any of the aforementioned substances.

Missouri

Bills Introduced.—H. 658, to amend the osteopathic practice act, proposes that "The system, method or science of treating diseases of the human body, commonly known as osteopathy, and as taught and practiced in *any school of osteopathy recognized and approved by the American Osteopathic Association,* is hereby declared not to be the practice of medicine and surgery" within the meaning of the medical practice act and not subject to its provisions. The present law has, in place of the words italicized "the American School of Osteopathy of Kirksville, Missouri." H. 662, to amend the food and drug act, proposes to repeal that section of the act prohibiting the manufacture, production, sale or possession of any article of food or drug which is adulterated or misbranded and to substitute for it a provision requiring all drugs, except those described in original, nonrefillable, hand-written prescription, signed by a licensed physician or veterinarian, to be labeled with the true English name, together with a statement as to the danger and sometimes untoward effects of the drug in question and to give the names of at least two active antidotes printed on the label in a type as large as any used thereon.

New Jersey

Bills Introduced.—S. 210, to amend the law granting a lien to a licensed physician treating a person injured through the negligence of another, proposes to deprive the attending physician of the lien if, without the consent of his patient, he makes any report whatever concerning the nature of the injuries to the person whose negligence is alleged to be responsible for the injury or to that person's insurance carrier. S. 214 proposes to require any county prosecutor who receives information as to the existence of any marihuana weed in his county to notify the State Department of Health of the fact and to require the department on receipt of such information to investigate concerning the existence of the weed in that location. The department is then to certify to the county prosecutor as to the existence of the weed and the prosecutor is then empowered to destroy the weed if it is present. A. 464 proposes that at least one member of the State Board of Health shall be a registered pharmacist. A. 493 proposes to permit any person more than 21 years of age, of good moral character, a citizen of the United States, who has received a license to practice chiropractic in this state and who has completed a course of study of not over [sic] one thousand hours of physiotherapy, including dietetics, in a medical or professional school or a special course designated and approved by the state board of medical examiners, to be admitted to an examination in physiotherapy and dietetics to be given by the board for a license to practice physiotherapy and dietetics.

New York

Bills Passed.—The following bills passed the assembly March 22: A. 1428, proposing that a license to practice osteopathy shall entitle the holder thereof to use instruments for minor surgical procedures and to use anesthetics, antiseptics, narcotics and biological products; and A. 1433, proposing to

prohibit except on the written prescription of a licensed physician, dentist or veterinarian, the retail sale or distribution of barbital, sulphonethylmethane (trional), diethylsulphor diethylmethane [sic] (tetronal), carbromal, chloral or chloral hydrate, or chlorbutanol.

Bills Introduced.—S. 1492 proposes to limit licensure in medicine to citizens of the United States. The present law limits licensure to citizens of the United States or persons who have declared their intention of becoming such citizens. S. 1510 proposes to prohibit the manufacture, distribution or advertising of adulterated and misbranded foods. S. 1545 and A. 2042 propose to declare the policy of the state that the manufacture and sale of adulterated or misrepresented foods, drugs and cosmetics are matters of state concern and to create a temporary state commission to recommend to the legislature a comprehensive program for the regulation and prevention of the manufacture and sale of adulterated or misrepresented foods, drugs and cosmetics and to submit proposals designed to prevent and eliminate false and misleading advertising relating to the products named. A. 2028 proposes to repeal the law granting liens to hospitals treating persons injured through the negligence of others.

North Carolina

Bill Introduced.—S. 336 proposes to enact a separate naturopathic practice act and to create a board of naturopathic examiners to examine and license persons applying for licenses to practice naturopathy. The bill states that naturopathy is "defined to mean the use and practice of natural methods as taught in standard colleges of Naturopathy and as defined and enacted by Congress February 16, 1931 [as a matter of fact no such law was ever enacted by Congress], embracing the physiological, mechanical and material health sciences to aid in purifying, cleansing and normalizing the human organism, for the preservation or restoration of health, according to the fundamental principles of anatomy, naturopathic physiology and applied psychology, as may be required." The bill specifically proposes to permit such licentiates to practice "nonsurgical gynecology" and "midwifery" but prohibits its licentiates from practicing "materia medica, radium therapy, medicine or surgery." Aside from the practices prohibited specifically, licentiates apparently will be able to practice without restriction.

Oklahoma

Bill Introduced.—H. 496, to amend the medical practice act, proposes to require all licensed physicians to register annually with the board of medical examiners on or before July 1 and to pay at that time an annual registration fee of $3.

Pennsylvania

Bill Introduced.—H. 565 proposes to enact a separate practice act for persons practicing the natural healing arts and to create a board of examiners to examine and license applicants for such licenses. The board, apparently, is to be authorized to issue two sorts of licenses: (1) a license permitting the treatment of the body by any movements, adjustments and manipulations performed by the hands or nonsurgical instruments or appliances and (2) a license conferring the rights just stated and, in addition, permitting the use of any physical forces, such as air, light, water, heat, cold, electricity or any of their derivatives, phytotherapy, dietetics and exercises, or any other system or systems of therapeutics correlated with the foregoing therapeutic measures.

Rhode Island

Bills Introduced.—S. 198 proposes to enact a separate naturopathic practice act and to create a board of examiners in naturopathy to examine and license applicants for licenses to practice naturopathy. The bill states that "the practice of the profession of naturopathy is hereby designated as non-medical and drugless, and is defined as a science dealing with the diagnosis and treatment of disease through natural therapeutics. It shall embrace and include physiological, mechanical and dietetic sciences, such as mechano-therapy, electro-therapy, use of diet and herbs including powdered and dehydrated foods and fruits, and other methods as taught in the various recognized schools of naturopathy, excepting, however, surgery and the prescription of compounded drugs." H. 884, to amend the osteopathic practice act, proposes that "The acceptance of any federal law or regulation or the application thereof by any department or bureau of this state which affects medical practice or the control of public health or medical care of state dependents, shall apply equally to practitioners of osteopathy and practitioners of medicine." H. 913 proposes to prohibit the sale or distribution of appliances, condoms, drugs or medicinal preparations intended or having special utility for the prevention of venereal diseases and/or used in gynecologic hygiene or treatments except by places duly registered by the division of narcotics and pharmacy or by licensed physicians.

Wisconsin

Bills Introduced.—S. 288 and A. 519 introduced at the request of the Wisconsin Hospital Association, Conference of Catholic Hospitals and the Wisconsin Medical Society, propose to authorize the formation of corporations to establish and operate nonprofit hospital service plans whereby certain hospital service may be provided by participating hospitals to persons who may become subscribers to such plans. The term "participating hospital" refers to any hospital which has a contract with a nonprofit hospital service membership corporation to render hospital service to subscribers to the hospital service plan. The bill proposes that members of such corporation shall be (1) three nonmedical persons designated by each participating hospital, at least two of whom shall be directors or be active in the operation of such participating hospital; and (2) a number of persons equal to the number of participating hospitals.

WOMAN'S AUXILIARY

Arizona

Dr. J. D. Hamer spoke, at a recent meeting of the auxiliary to the Maricopa County Medical Society held in Phoenix, on the special autumn meeting of the House of Delegates of the American Medical Association.

Michigan

The board of directors of the auxiliary to the Michigan State Medical Society met in Detroit November 18. Mrs. P. R. Urmston, president, gave a report on the meeting of the board of directors of the auxiliary to the American Medical Association, which was held in Chicago November 11. Proceeds from a rummage sale held by the auxiliary to the Bay County Medical Society amounted to $75. William J. Burns, executive secretary, Michigan State Medical Society, spoke before the auxiliary in November on the national health program.

The auxiliary to the Calhoun County Medical Society has donated seven wheel chairs to the new Community Hospital.

The auxiliary to the Jackson County Medical Society was addressed by Dr. Philip A. Riley on the pending legislative measures that were approved at the recent state medical meeting in Detroit. Dr. Riley discussed the measures based on socialized medicine, stating that Jackson, Calhoun and Washtenaw counties have far more hospital beds than are needed at present.

Oregon

The auxiliary to the Multnomah County Medical Society presented its first hobby show last September. There were seventy-four exhibits. In October the auxiliary was addressed by Dr. Charles E. Sears, Portland, on "What the Medical Association Can Do to Provide Better Medical Aid to the People," and Dr. Robert L. Benson, Portland, on "The National Health Conference."

Virginia

The auxiliary to the Mid-Tidewater Medical Association met in January at West Point. Dr. Wright Clarkson of Petersburg spoke on cancer work. Mrs. Joseph Bear, Richmond, also spoke on the work of the woman's field army of the American Society for the Control of Cancer.

The auxiliary to the Norfolk County Medical Society met January 11. Mrs. Hawes Campbell, president of the auxiliary to the Medical Society of Virginia, spoke on health problems.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ARIZONA

State Medical Meeting in Phoenix.—The Arizona State Medical Association will hold its forty-eighth annual meeting in Phoenix April 13-15 with headquarters at the Hotel Westward Ho. Dr. Harold W. Rice, Bisbee, is president. The guest speakers will include:

Dr. John C. Jones, Los Angeles, Extrapleural Pneumothorax in the Treatment of Phthisis.
Dr. Frank T. Hogeland, Sonora, Mex., The Medical Control of Silicosis.
Dr. Edward William Alton Ochsner, New Orleans, Thrombophlebitis.
Dr. Norman F. Miller, Ann Arbor, Mich., Common Lesions of the Cervix and Their Treatment.
Dr. Webb W. Weeks, New York, Eye Diseases in Their Relation to General Medicine.
Dr. Lewis F. Morrison, San Francisco, Impaired Nasal Ventilation in the Adult.
Dr. Edward H. Cary, Dallas, Texas, Federal Trends in Medical Care and Health Legislation.
Dr. Frederick Kellogg, Long Beach, Calif., Recent Advances in Syncope or Medical Shock.

The speakers from Arizona will include:

Dr. Dermont W. Melick, Williams, Artificial Pneumothorax: 1. Its Application to the Ambulatory Patient.
Dr. Leslie B. Smith, Phoenix, Diabetes Mellitus and Observations with Protamine Zinc Insulin.
Dr. Lyle A. Condell, Safford, Undulant Fever and Its Treatment with Sulfanilamide.
Dr. Robert E. Hastings, Tucson, Low Back Pain with Sciatic Radiation.
Dr. John W. Pennington, Phoenix, Enuresis.
Dr. Howard C. James, Tucson, Metabolism in Pregnancy.
Dr. Zenas B. Noon, Nogales, Differentiation of Parietal and Intra-Abdominal Pain.
Dr. Joseph Bank, Phoenix, Diagnostic Value of and Indications for Gastroscopy.

The woman's auxiliary will meet at the Westward Ho Thursday, April 13-14. Speakers will include Drs. Jack B. Eason, Phoenix, director, maternal and child health, state department of public health, on "Role of the Auxiliary in Maternal and Child Health Program," and Dr. Miller.

CALIFORNIA

Lectures for the Public.—The fifty-seventh course of popular medical lectures will be offered by Stanford University School of Medicine, San Francisco, in Lane Hall as follows:

Dr. Edwin L. Bruck, April 7, Pneumonia and Its Treatment by Recent Serums and Drugs.
Dr. Harold A. Fletcher, April 21, Electrical Engineers Come to the Aid of the Hard of Hearing.
Claude A. Shull, M.A., May 5, What Are the Movies Doing to the Emotional Stability of Our Children?
Dr. Paul A. Gliebe, May 19, Emotions and Physical Diseases.

CONNECTICUT

Hospital News.—A building program is under way for Mount Sinai Hospital, Hartford, to permit the renovation and construction of an east wing, thus increasing the bed capacity to more than 100. It is hoped to secure $250,000 in a campaign for funds which was to begin in February.

New Chief of Crippled Children Division.—Dr. Louis Spekter has been appointed chief of the division of crippled children of the Connecticut State Department of Health, Hartford, succeeding Dr. Russell V. Fuldner, resigned. Dr. Spekter graduated at the University of Rochester School of Medicine, Rochester, N. Y., in 1933.

Committee to Aid Yale's Program of Development.—A committee of physicians and laymen has been appointed to aid Yale University in the development of its program in medicine and public health, it was announced at a meeting of medical alumni in the Sterling Hall of Medicine, New Haven, February 23. Dr. Harvey Cushing, Sterling professor of neurology emeritus and director of studies in the history of medicine, will be general chairman. An executive committee is composed of the following: Dean Stanhope Bayne-Jones, chairman; Fuller F. Barnes, Bristol, Conn.; William McCormick Blair, Chicago; George Parmly Day, New Haven; Thomas W. Farnam, New Haven; Dr. Norman E. Freeman, Philadelphia; Harry C. Knight, New Haven; Dr. Fred T. Murphy, Detroit; Charles-E. A. Winslow, Dr.P.H., New Haven, and Dr. Milton C. Winternitz, New Haven. The committee is to assist in making better known among the alumni and friends of the university the work of Yale in medicine and public health. Large sums, contingent on the receipt of further gifts, have been pledged for the development of this work.

GEORGIA

Personal.—Dr. John L. Elliott, Savannah, has been elected coroner of Chatham County.——Dr. Young H. Yarbrough, Milledgeville, has been appointed assistant superintendent of the Milledgeville State Hospital.——Dr. James A. Thrash, Columbus, health officer of Columbus and Muscogee counties, has been elected superintendent of the Muscogee County Tuberculosis Hospital.——Dr. Clarence M. Sharp, formerly of Lake Kushaqua, N. Y., has been appointed superintendent of the state tuberculosis sanatorium at Alto.

ILLINOIS

Society News.—Dr. Leonard T. Furlow, St. Louis, discussed "Acute Head Injuries" before the Sangamon County Medical Society, Springfield, February 2.——Dr. Lee C. Gatewood, Chicago, addressed the Will-Grundy County Medical Society at Joliet March 24 on "Jaundice—Its Causation and Clinical Study."

Chicago

Dr. Lord Will Discuss Pneumonia.—Dr. Frederick T. Lord, clinical professor of medicine emeritus, Harvard Medical School, Boston, will lecture at a joint meeting of the Chicago Medical Society and the Institute of Medicine of Chicago April 5 on "The Serum Treatment of Pneumonia." A sound film "The New Day" will also be shown.

The Gehrmann Lectures.—Dr. Herbert C. Clark, director, Gorgas Memorial Institute of Tropical and Preventive Medicine, Inc., Panama, Canal Zone, will deliver the Gehrmann Lectures for 1938-1939 of the University of Illinois College of Medicine in the Medical and Dental College Laboratories Building, 1853 West Polk Street. His subjects are:

April 12, Malaria. Its Effect on Labor Efficiency in the Tropics.
April 13, Amebiasis, Clinical and Nonclinical.
April 14, Modern Factors Favoring Spread of Diseases.

Branch Meetings.—Dr. James B. Collip, professor and head of the department of biochemistry, McGill University Faculty of Medicine, Montreal, Canada, will discuss "Results of Recent Laboratory Studies on Anterior Pituitary Hormones" before the North Side Branch of the Chicago Medical Society April 6. A symposium on diseases of bones will be presented before the North Shore Branch April 4; Dr. Arthur Steindler, Iowa City, will discuss "Fracture Deformities and Contractures" and Dr. Charles F. Geschickter, Baltimore, "Malignant Tumors of Bones."

INDIANA

Emeritus Staff Members Honored.—A new division of emeritus members was recently created at Deaconess Hospital, Evansville, to honor older staff physicians. The following twelve physicians have been designated charter members: Walter H. Coleman, Earl Conover, George C. Dunlevy, William H. Field, Charles B. Harpole, Charles W. Hartloff, Bleeker J. Knapp, William E. McCool, Henry Nenneker, Marcus Ravdin, Olen C. Stephens and William P. Woods. The group was honored at a dinner February 21, the forty-seventh anniversary of the hospital.

Society for the History of Medicine.—The Indiana Association of the History of Medicine was organized at a meeting February 15 in the library of Eli Lilly & Co., Indianapolis. Dr. Edgar F. Kiser was chosen president. The next meeting will be held May 17 at the same place. It is planned to hold quarterly meetings, and application for membership has been made to the American Association of the History of Medicine. Additional information may be obtained from Mrs. Irene Strieby, library, Eli Lilly & Co. Dr. William N. Wishard Jr., Indianapolis, addressed the recent meeting on the life of Edward Jenner.

Personal.—Mr. Rollen Waterson, Whiting, has been appointed executive secretary of the Lake County Medical Society, a recently created position. Temporary headquarters have been set up in the Hammond City Hall. The society recently became incorporated.——Dr. Philip H. Becker, Crown Point, has been appointed superintendent of the Lake County Tuberculosis Sanatorium, succeeding the late Dr. James O.

Parramore; he formerly served as assistant. According to the state medical journal, a new wing providing 100 beds is about to be opened, and a new chapel is to be named in honor of Dr. Parramore.——Drs. Oliver V. Schuman and Nathan I. Kithcart, Columbia City, were recently voted honorary membership in the Whitley County Medical Society.

MARYLAND

New Physician-in-Chief of Baltimore City Hospitals.—Dr. John T. King, associate in medicine, Johns Hopkins University School of Medicine, Baltimore, was recently appointed physician-in-chief of the Baltimore city hospitals, filling the vacancy caused by the death of Dr. Thomas R. Boggs. Dr. King graduated at Johns Hopkins in 1914.

Graduate Week in Medical History.—"Medicine in the Renaissance" will be the theme of the second graduate course in medical history at the William H. Welch Medical Library, April 24-29, under the auspices of the Institute of the History of Medicine, Johns Hopkins University, Baltimore. The course will precede the annual meeting of the American Association of the History of Medicine in Atlantic City, N. J., April 30-May 1, so that members of the course can proceed directly from Baltimore to Atlantic City. A registration fee of $5 will be charged. The speakers will be:

Dr. Henry E. Sigerist, director of the institute, Economic, Social and Political Foundations of the Renaissance.
Ludwig Edelstein, Ph.D., Ancient Traditions in Medieval and Renaissance Thought.
J. Ben Robinson, D.D.S., dean, University of Maryland School of Dentistry, Influences Exercised by Conventional Medicine on the Beginning of Autonomous Dental Education.
Ruth Musser, M.S., and John C. Krantz Jr., Ph.D., department of pharmacology, University of Maryland School of Medicine, The Friendship of Christopher Wren and Robert Boyle.
Dr. Owsei Temkin, The Physician in the Renaissance.
Dr. Sanford V. Larkey, Hygiene and Public Health in the Renaissance.
Dr. John Rathbone Oliver, The Oxford of Anthony Wood.

The subjects of the seminars planned for each afternoon are "The Concept of the Renaissance," "Bibliographic Problems of Renaissance Literature," "Some Biological Problems of the Renaissance," "Diseases Prevailing in the Renaissance and Their Interpretation" and "Medical Literature in the Vernacular: English, German, French, Italian." Isaiah Bowman, LL.D., president, Johns Hopkins University, will open the course and Dr. Alan M. Chesney, dean of the school of medicine, will deliver the closing address. Applications to attend the course should be addressed to the Institute of the History of Medicine, 1900 East Monument Street, Baltimore, before April 10.

MICHIGAN

Undulant Fever at State College Traced.—Defective plumbing combined with the use of a faulty sterilizer in the bacteriology laboratory was the cause of an outbreak of undulant fever which caused the death of one student and the illness of forty-eight others at Michigan State College, East Lansing (THE JOURNAL, February 18, p. 653). According to the state department of health, back-siphonage of contaminated water from a sink in the basement of the undulant fever laboratory and its spread through the bacteriology building's distributing system to all outlets on the second and third floors has been demonstrated. Glassware used in growing undulant fever cultures was washed at this sink after being removed from a steam sterilizer. Tests indicated that living germs were present on the glassware after it had been in the sterilizer for one hour. This had been considered ample time to kill the germs if the apparatus had functioned properly, it was said. Immediate causes of the outbreak have been corrected.

Society News.—Dr. Jerome R. Head, Chicago, presented a "Survey of Thoracic Surgery" before the Muskegon County Medical Society February 17.——Dr. Robert L. Schaefer, Detroit, addressed the Calhoun County Medical Society, Battle Creek, February 7 on "Diagnosis and Treatment of Gonadal Immaturity."——Dr. Edward F. Sladek, Traverse City, addressed the Northern Michigan Medical Society in Petoskey February 9 on latest trends in state legislation concerning organized medicine.——Dr. Carl F. Schmidt, Philadelphia, discussed "New Drugs—How They Are Discovered and Introduced" before the Wayne County Medical Society and the Detroit Retail Druggists Association February 27.——The Detroit Dermatological Society was addressed February 21 by Drs. Arthur E. Schiller on "The Industrial Nurse"; William T. Krebs, "The Plant Physician"; John Ewart Caldwell, "The Interpretation of the Michigan Industrial Disease Law," and Mr. L. B. Case, "The Plant—Its Equipment and Chemistry."

MINNESOTA

Clarence M. Jackson Lecture.—The Clarence M. Jackson Lecture is under the auspices of the Phi Beta Pi Fraternity of the University of Minnesota and not the Hennepin County Medical Society as stated in THE JOURNAL March 11, page 1005.

Harold S. Boquist Lecture.—Dr. Henry C. Sweany, medical director of research, Chicago Tuberculosis Sanatorium, Chicago, will deliver the annual Harold S. Boquist Lecture at the University of Minnesota Medical School, Minneapolis, April 4, on "Study of the Pathogenesis of Tuberculosis by Correlating Age and Morphology of Primary Tubercles."

MISSOURI

State Medical Meeting at Excelsior Springs.—The Missouri State Medical Association will hold its annual session in Excelsior Springs April 10-12. The speakers will include:

Dr. Alexis F. Hartmann, St. Louis, Clinical Use of Sulfanilamide and Its Derivatives.
Dr. Jennings C. Litzenberg, Minneapolis, The Conduct of Normal Labor and Its Abuses.
Dr. William M. Ketcham, Kansas City, The Male Sex Hormone.
Drs. John J. Boucek, Charles E. Gerson and Andrew C. Henske, all of St. Louis, Pneumoperitoneum in the Treatment of Pulmonary Tuberculosis.
Dr. Warren H. Cole, Chicago, Surgical Aspects of Peptic Ulcer.
Dr. Goronwy O. Broun, St. Louis, Clinical Studies of Vitamin K.
Dr. James Archer O'Reilly, St. Louis, The Crippled Child in Missouri.
Dr. Idys Mims Gage, New Orleans, Acute Trauma of the Abdominal Viscera (Subcutaneous Injury of the Abdomen); Surgery of Acute Cholecystitis.
Dr. George Wilse Robinson Jr., Kansas City, Treatment of Depressions and Melancholias.
Dr. Sumner L. S. Koch, Chicago, The Worker's Hand.
Dr. Raymond O. Muether, St. Louis, Recent Developments in the Treatment of Lobar Pneumonia.
Dr. Fred M. Smith, Iowa City, Diagnosis and Treatment of Coronary Thrombosis.
Dr. Drew W. Luten, St. Louis, The Heart.
Dr. Jacob Kulowski, St. Joseph, The Modern Approach to the Problem of Acute Hematogenous Osteomyelitis.
Dr. Evarts A. Graham, St. Louis, Accomplishments of Modern Chest Surgery.
Dr. William Malamud, Iowa City, Modern Trends in the Treatment of Schizophrenia.
Dr. Byrl R. Kirklin, Rochester, Minn., The Value of X-Ray Diagnosis as It Pertains to the Physician in General Practice.
Dr. Alfred W. Adson, Rochester, Minn., The Status of Sympathectomy for Hypertension.
Dr. Walter M. Whitaker, Quincy, Ill., Pneumonia in Childhood.
Dr. Frederick J. Taussig, St. Louis, The Role of the Ellis Fischel State Cancer Hospital in the Control of Cancer in Missouri.
Dr. Paul F. Cole, Springfield, Missouri Cancer Survey, 1938.
Dr. Carl F. Vohs, St. Louis, Prepayment Medical and Hospital Care.

Drs. Bernard W. Hays, Jackson, and James R. McVay, Kansas City, will deliver addresses as president and president-elect respectively.

NEW YORK

Course on General Medicine.—Members of the Columbia County Medical Society attended a course on general medicine at the Hudson City Hospital in recent weeks. The lecturers, all of New York, were:

Dr. William Goldring, Physiological Interpretation of the Clinical Manifestations in Renal Diseases and Hypertension, January 10.
Dr. Samuel H. Geist, Practical Endocrinology, January 24.
Dr. Ralph G. Stillman, Significance of Laboratory Tests and Methods in the Practice of Medicine, February 7.
Dr. Alexander B. Gutman, Dehydration, Acidosis and Shock, February 21.
Dr. Edward M. Livingston, Abdominal Pain, March 7.

Society News.—Dr. Abraham H. Aaron, Buffalo, addressed the Medical Society of the County of Westchester March 21 on "Treatment of Selected Gastrointestinal Conditions from the Viewpoint of the General Practitioner."——Drs. Edward C. Reifenstein and Fred L. Ritter addressed the Onondaga County Medical Society, Syracuse, March 7 on "Recent Advances in Pneumonia Therapy" and "Diverticulitis with Perforation" respectively.——Dr. Perry G. Goldsmith, Toronto, Ont., addressed a joint meeting of the Syracuse Academy of Medicine and the Syracuse Ear, Nose and Throat Club March 21 on "Diseases of the Upper Respiratory Tract with Hoarseness as a Symptom."——Dr. John E. Deitrick, New York, addressed the Dutchess County Medical Society February 8 at the Hudson River State Hospital on "Failure of the Peripheral Circulation."

New York City

Personal.—Dr. George K. Meynen, Jamaica, was recently honored with a testimonial dinner given by about 200 friends and colleagues of Jamaica Hospital. Dr. Meynen has prac-

ticed medicine in Queens for fifty-two years; he was one of the founders of Jamaica Hospital and its first surgeon, according to a bulletin from the hospital.

Symposium on Venereal Disease.—Under the auspices of the department of urology of New York Medical College and Flower-Fifth Avenue and Metropolitan hospitals, the New York City Department of Health and the Social Hygiene Committee of the New York Tuberculosis and Health Association, a symposium on "the human side of the venereal diseases" was presented February 8 at the Meinhard Health Center and the East Harlem Health Center.

Meeting on Heart Disease.—At a scientific session of the New York Heart Association March 28 the speakers included Drs. Harold E. B. Pardee, on "Uniform Criteria for the Diagnosis of Heart Disease and a Discussion of Special Features of the New Edition of the Criteria"; Clarence E. de la Chapelle, "The Anatomical Changes Produced by Heart Disease," and Charles E. Kossmann, "The Contribution of Electrocardiography to Heart Disease."

Medical Service in Vocational Schools.—The vocational school division of the public school system has established a complete medical unit in each of the twenty-four trade and industrial schools, according to the New York *Times*. Forty physicians and as many nurses have been assigned to watch the health of 55,000 students in these schools. Each child is to have a thorough physical examination and a follow-up system is to check on remediable ailments. Students who cannot afford private treatment are sent to clinics. One physician and one nurse will be on duty as long as classes are in session. The new arrangement is an expansion of previous service. Last year, although not every school had a complete medical staff, 42,000 pupils were examined. Only 10,000 were found to be free from defects. More than 3,500 defects were corrected. Twenty thousand pupils were examined to discover whether they had chosen a vocation to suit their physical capacities; 6,000 were found to be in work unsuited to them. In some the impairments were corrected, but in 1,500 the defects could not be remedied and these children were directed into other fields, it was said.

OKLAHOMA

Society News.—Dr. Philip M. McNeill, Oklahoma City, addressed the Okfuskee-Okmulgee County Medical Society, Okemah, January 18 on pneumonia.——Dr. E. Rankin Denny, Tulsa, addressed the Tulsa County Medical Society, Tulsa, March 13 on "Physiology of Oxygen Want and Clinical Use of Oxygen" and Mr. J. I. Banash, consultant engineer, Chicago, "Methods of Administering Oxygen."

PENNSYLVANIA

Society News.—Drs. William J. Fetter and William L. Mullins, Pittsburgh, addressed the Jefferson County Medical Society, Punxsutawney, March 9 on "Biliary Tract Problems" and "Clinical Aspects of Coronary Artery Disease" respectively.——Dr. Charles Howard Marcy, Pittsburgh, addressed the Mercer County Medical Society, Grove City, March 8 on "Modern Treatment in Tuberculosis."——Dr. George Harlan Wells, Philadelphia, addressed the Delaware County Medical Society, Chester, March 9 on "Comparative Value of Antipneumococcic Serum and Sulfapyridine in the Treatment of Pneumonia."

Philadelphia

The Samuel D. Gross Prize in Surgery.—The Philadelphia Academy of Surgery announces that essays will be received in competition for the Samuel D. Gross Prize of $1,500. According to the conditions, this prize is awarded every five years "to the writer of the best original essay, not exceeding one hundred and fifty printed pages, octavo, in length, illustrative of some subject in surgical pathology or surgical practice founded on original investigations, the candidates for the prize to be American citizens." The competitor who receives the prize shall publish his essay in book form and he shall deposit one copy of the work in the Samuel D. Gross Library of the Philadelphia Academy of Surgery. Essays must be written in English by a single author. Each essay must be typewritten, distinguished by a motto and accompanied by a sealed envelop bearing the same motto, containing the name and address of the writer. The committee will return the unsuccessful essays if reclaimed by the writers or their agents within one year. The committee reserves the right to make no award if the essays submitted are not considered worthy of the prize. The entries should be addressed to the Trustees of the Samuel D. Gross Prize of the Philadelphia Academy of Surgery, care of the College of Physicians of Philadelphia, 19 South Twenty-Second Street, Philadelphia, on or before Jan. 1, 1940.

Pittsburgh

Society News.—Dr. Leo H. Criep addressed the Pittsburgh Otological Society March 6 on "The Relationship of Allergy to Ear, Nose and Throat."——Dr. William F. Braasch, Rochester, Minn., addressed the Pittsburgh Urological Association March 13 on "Unusual Urographic Data."——Speakers before the Allegheny County Medical Society March 21 were Drs. Oliver C. Wenger of the U. S. Public Health Service on "Opportunity for the Physician in a Syphilis Control Program"; Harry I. Miller, "Newer Concepts in the Management of Peripheral Vascular Disease"; Herbert Frankenstein, "Spontaneous Subcutaneous Rupture of the Stomach," and Lawrence Wechsler, "Hematemesis: Problems in Diagnosis and Medical Treatment."

SOUTH CAROLINA

State Medical Meeting at Spartanburg.—The ninety-first annual meeting of the South Carolina Medical Association will be held in Spartanburg April 11-13 at the Hotel Cleveland. The preliminary program includes the following speakers:

Dr. Marion H. Wyman, Columbia, You Can't Socialize a Doctor's Mind.
Dr. Carl B. Epps, Sumter, Shall We Be Leading Pioneers or Driven Slaves?
Dr. Frank Philip Coleman, Columbia, Surgical Management of Pulmonary Tuberculous and Nontuberculous Chest Diseases.
Dr. Keitt H. Smith, Greenville, The Use of Sulfanilyl-Sulfanilamide in the Treatment of Specific Urethritis and Urinary Infections.
Dr. Irwin Grier Linton, Charleston, Vaginal Hysterectomy.
Dr. Sol B. McLendon, Columbia, Epilepsy and Its Management.

Round table conferences will form part of the program. The program lists discussions of deficiency diseases, conducted by Dr. Virgil P. W. Sydenstricker, Augusta, Ga.; roentgenology, Dr. William M. Sheridan, Spartanburg; surgery, Dr. Frederick E. Kredel, Charleston; allergy, Dr. Foster M. Routh, Columbia, and obstetrics, Dr. Robert E. Seibels, Columbia.

TENNESSEE

State Medical Meeting in Jackson.—The annual meeting of the Tennessee State Medical Association will be held in Jackson April 11-13 at the New Southern Hotel under the presidency of Dr. Tom R. Barry, Knoxville. At an evening meeting Tuesday April 11 Dr. Barry will deliver his official address and Dr. Rock Sleyster, Wauwatosa, Wis., President-Elect of the American Medical Association, will discuss "Medical Problems of the Day." Other guest speakers will be:

Dr. James B. McLester, Birmingham, Ala., Pellagra and Its Modern Treatment with Special Emphasis on the Borderline States.
Dr. Fred W. Rankin, Lexington, Ky., Combined Abdominoperineal Resection of the Rectum (talking motion picture in color).
Dr. Clarence H. Crego Jr., St. Louis, Operative Correction of Lower Extremity Length Inequality.
Dr. Leon J. Menville, New Orleans, Breast Cancer: Technic of Examination and Preoperative Radiation.

Tennessee physicians on the program will include:

Dr. Joseph P. Gilbert, Nashville, Epilepsy; Diagnosis and Treatment.
Dr. Henry B. Brackin, Nashville, Metrazol Treatment of Dementia Praecox, or More Frequently Now Called Schizophrenia.
Dr. Horace Barton McSwain, Paris, Auscultation in the Diagnosis of Surgical Diseases of the Abdomen.
Dr. Alfred M. Goltman, Memphis, Manifestations of Allergy Other Than Asthma.
Dr. Robert H. Williams, Nashville, Sulfanilamide Pyridine in the Treatment of Pneumonia.
Lt. Col. George W. Reyer, Medical Corps, U. S. Army, Nashville, The Necessity for Medical Military Preparedness.
Dr. Willis H. Thompson, instructor for the graduate course in pediatrics, formerly of Minneapolis, Feeding Problems in Infancy.

TEXAS

Personal.—Dr. William L. Brown, El Paso, was recently made an honorary member of the Southwestern Medical Association, of which he was a founder twenty-five years ago.——Dr. William S. Terry Jr., Jefferson, was recently appointed health officer of Marion County.——Dr. John C. Blair, Kerens, was recently elected chairman of the state board of education, it is reported.——Dr. Otho C. Bowmer, Corsicana, was recently elected health officer of Navarro County.

District Meetings.—The Twelfth (Central Texas) District Medical Society met in Waco recently. The speakers included Drs. Lewis W. Pollok, Temple, on "Surgical Treatment of Uterovaginal Prolapse"; Harry H. McClellan, San Antonio, "Is Insanity an Inherited Defect or an Acquired Delirium?"; Herbert E. Hipps, Marlin, "A New Surgical Procedure in Acute Arthritis," and Howard R. Dudgeon Jr., Waco, "Primary Thrombocytopenic Purpura Haemorrhagica." ——The Tenth District Medical Society in cooperation with the state department of health sponsored a two day graduate course in obstetrics and pediatrics in Lufkin February 9-10. The lecturers were Drs. Calvin R. Hannah and Hugh Leslie Moore, Dallas.

WISCONSIN

State Board Appointments.—Drs. George R. Reay, La Crosse, and Henry W. Howe, Racine, have been appointed to the state board of medical examiners. They succeed Drs. Alvin G. Koehler, Oshkosh, and Henry O. McMahon, Milwaukee.

New Chairman of Cancer Committee.—Dr. Marcos Fernan-Nunez, professor of pathology and bacteriology, Marquette University School of Medicine, Milwaukee, has been appointed chairman of the cancer committee of the State Medical Society of Wisconsin. He succeeds Dr. William D. Stovall, Madison, who recently resigned after ten years of service.

Society News.—Speakers at a meeting of the Milwaukee Pediatric Society February 8 were Drs. John Lester Reichert, Chicago, "Treatment of Nonspecific Vaginitis in Children"; Elmer L. Sevringhaus, Madison, "Endocrine Changes in Adolescence," and John Dale Owen, Milwaukee, "The Physiology of the Vaginal Tract."——Dr. Jacob Arnold Bargen, Rochester, Minn., addressed a joint meeting of the Milwaukee Academy of Medicine and the Milwaukee Gastroenterological Society February 21 on "Regional Enteritis: Pathology, Diagnosis and Clinical Observations."——Speakers before the Medical Society of Milwaukee County February 10 were Dr. Rock Sleyster, Wauwatosa, President-Elect of the American Medical Association, on "Medical Problems of the Day"; Mr. J. C. Gamroth, state compensation officer, Madison, "The U. S. Compensation Act for Injuries to WPA Workers," and Mr. J. George Crownhart, secretary, State Medical Society of Wisconsin, Madison, on "Sickness Insurance."

GENERAL

Special Society Election.—Dr. Samuel W. Hartwell, Buffalo, was elected president of the American Orthopsychiatric Association at its annual meeting in New York in February. Dr. Norvelle C. La Mar, New York, was reelected secretary. The 1940 meeting will be held in Boston.

Warning—Fraudulent Instrument Man.—The American Surgical Trade Association reports that a swindler is operating among Ohio physicians claiming to represent surgical supply houses and collecting in advance for surgical instruments. The firms he claims to represent are nonexistent and the physicians are being swindled, according to the association. Physicians are warned not to pay money in advance to unknown persons.

American Institute of Nutrition.—A symposium on "Fortification of Foods with Vitamins and Minerals" will form the program of the annual meeting of the American Institute of Nutrition in Toronto, Canada, April 26. Speakers in the symposium will be Agnes Fay Morgan, Berkeley, Calif.; Lydia Roberts, Ph.D., Chicago; Dr. William H. Sebrell Jr., U. S. Public Health Service; E. M. Nelson, Ph.D., U. S. Department of Agriculture, Washington, D. C., and Dr. Alonzo E. Taylor, Stanford University, Calif.

April Is "Cancer Control Month."—President Roosevelt has issued the annual proclamation as provided by a law passed in 1938 designating April as "Cancer Control Month" and inviting governors of the states, territories and possessions of the United States to similar action. The proclamation invites all agencies interested in a national program for the control of cancer to unite during April "in a concerted effort to impress upon the people of the nation the necessity for this program and the importance of constant vigilance in this fight for humanity."

Conference of Radiologists.—The American College of Radiology held its ninth annual conference with the Conference of Teachers of Clinical Radiology under the auspices of the commission on education of the college February 12 in Chicago. At an afternoon meeting Dr. Walter F. Donaldson, Pittsburgh, spoke on "Medical Economics and the National Scene" and Mr. Mac F. Cahal, executive secretary, The Inter-Society Committee for Radiology, reported on a survey of the economics of radiologic practice. An evening meeting was devoted to discussion of refresher courses for radiologists.

Symposium on Temperature.—The American Institute of Physics announces plans for a symposium on "Temperature and Its Measurement in Science and Industry" to be held this fall. Those interested in taking part in such a symposium should communicate with the institute at an early date, giving information about their field of work and the subject of the contribution that they wish to make. The purposes of the symposium are to (1) coordinate the treatment of the subject in the sciences and branches of engineering, (2) review principles and bring up to date the record of recent work, (3) accumulate contributions for a comprehensive text to be published as soon as possible after the symposium is held, (4) reveal the subject as an important branch of physics and (5) supply schools with the information required for the improvement of curriculums. Among members of the committee arranging the symposium is Dr. Eugene F. DuBois, professor of medicine, Cornell University Medical School, New York. Information may be obtained from the institute at 175 Fifth Avenue, New York. Henry A. Barton, Ph.D., is director.

Meetings at Richmond April 5-7.—The American Association for Cancer Research will hold its thirty-second annual meeting at the Medical College of Virginia, Richmond, April 5-6. Among those who will present papers are:

Dr. Shields Warren, Boston, The Prognostic Value of the Response to Radiation in Carcinoma of the Cervix.

Dr. Kenneth M. Lynch, Charleston, S. C., Carcinoma of the Lung in Asbestosilicosis.

Dr. George O. Gey, Margaret K. Gey and Margaret R. Lewis, Baltimore, Continuous Cultures of Blood Cell Tumors and Their Transplantability.

Wilton R. Earle, Ph.D., and Carl Voegtlin, Ph.D., Washington, D. C., Further Observations on the Mode of Action of Methylcholanthrene on Cultures of Normal Tissues.

The American Association of Pathologists and Bacteriologists will have its thirty-ninth annual meeting April 6-7 at the college. Among more than fifty papers on the program are the following:

Dr. Dale Rex Coman, Philadelphia, Experimental Peritonitis: Alteration of the Leukocytic Response After Repeated Injection of Physiologic Saline.

Drs. David Goldstein and Irving Graef, New York, The Influence of Sulfanilamide upon the Evolution of Experimentally Induced Pneumococcus Pneumonia in Rats.

Dr. Walter Schiller, Chicago, Concepts of a New Classification of Ovarian Tumors.

Dr. Harry Goldblatt, Cleveland, Experimental Observations on the Pathology and Pathogenesis of Essential Hypertension.

Drs. Irvine H. Page, Indianapolis, and Irving Graef, New York, Hypertension Following Experimental Perinephritis Induced by Cellophane.

Drs. Edwin F. Hirsch and Russell H. Morgan, Chicago, The Causal Significance to Traumatic Ossification of the Fibrocartilage in Tendon Insertions.

Dr. Alvin J. Cox Jr., San Francisco, Vitamin A Storage in Active and Arrested Liver Cirrhosis.

The American and Canadian section of the International Association of Medical Museums will hold its thirty-second annual meeting April 5. The program will include a symposium on photographic methods as applied to museum technic and discussions on technical methods and cardiovascular and other anomalies.

FOREIGN

Medical Meetings in Germany.—Announcement is made of medical meetings to be held in Germany within coming months, as follows:

German Ophthalmological Society, Heidelberg, September 4-6.

German Society for Digestive and Metabolic Disorders, Vienna, in September.

Ophthalmologic Tour to the United States.—The North of England Ophthalmological Society is sponsoring an "ophthalmologic tour" to the United States. Visits will be made to New York, Philadelphia and Washington. The group will leave Southampton on the *Nieuw Amsterdam* April 22, arriving in New York April 30, will be in Philadelphia May 5-7 and in Washington May 8-9 and will leave New York on the *Queen Mary* May 10.

Personal.—Dr. James R. Learmonth, regius professor of surgery in the University of Aberdeen, Scotland, has been appointed professor of surgery at the University of Edinburgh

to succeed the late Sir David P. D. Wilkie. Dr. Learmonth received a scholarship from the Rockefeller Foundation in 1924 and spent a year at the Mayo Clinic, Rochester, Minn. After a period in Scotland he returned to Rochester as a member of the surgical staff of the clinic in 1928 and remained there until 1932, when he went to the University of Aberdeen.——William D. Coolidge, Ph.D., director of the research laboratory of the General Electric Company, Schenectady, N. Y., has been awarded the Faraday Medal by the British Institution of Electrical Engineers. Dr. Coolidge is known for his development of the x-ray tube that bears his name, for the production of high voltage cathode rays outside the generating tube, for his work on modern x-ray generating apparatus, measurement of the dielectric constant of liquids and conductivity of aqueous solutions of high temperatures and on ductile tungsten. He has previously received the Hughes Medal of the Royal Society of Arts and Sciences and numerous American awards.

Deaths in Other Countries

Dr. Charles Cyril Okell, editor of the *Journal of Hygiene;* at one time assistant editor of the *Journal of Pathology and Bacteriology,* professor of bacteriology at the University of London College Hospital, died in Cambridge February 9, aged 50.——**Prof. Vaclav Libensky,** professor of medicine and director of the Polyclinic at Charles University, Prague, Czechoslovakia, president of the Czechoslovakian Society of Cardiology, died Dec. 10, 1938.

Government Services

Annual Report on the Health of the Army

For the fifth successive year, automobile accidents have been first in the list of causes of death in the United States Army. According to the annual report of the surgeon general, during the calendar year 1937 of 611 deaths, 329 were caused by disease and 282 by external causes. The death rate, 3.48 per thousand, was the lowest in eleven years. The leading causes were: automobile accidents 102, suicides 59, pneumonia 56, diseases of the coronary arteries and angina pectoris 41, airplane accidents 27, appendicitis 25, drowning 23, cancer and other malignant tumors 22, tuberculosis 17 and homicides 14.

The strength of the army in 1937 was 175,624, about 10,000 more than in 1936. The average officer strength was 11,706.

There were 108,756 admissions to sick report, a rate of 619 per thousand strength of personnel, somewhat lower than the 1936 rate. The infectious diseases proper and common respiratory diseases account for approximately 40 per cent and injuries 20 per cent of the admissions. Five causes, influenza, tonsillitis, bronchitis, injuries due to athletics and gonorrhea, produced 24.4 per cent of all illness in the army. For the army as a whole, the highest incidence of illness was among white enlisted men in Panama, the lowest among Filipinos, but the rate for Negro enlisted men exceeded that for Filipinos only slightly.

Gonorrhea headed the list of causes for loss of time, as it has every year since the World War, accounting for 194,973 days lost; the next in order was athletic exercises, with 68,790 days lost. Communicable diseases and injuries produce nearly half the noneffectiveness. The daily noneffective rate has remained about the same for many years; for 1937 it was 29.7 per thousand of strength.

Retirements and discharges for physical disability were responsible for the separations of 2,651 persons from the service in 1937: seventy-five officers and warrant officers, twenty nurses and 2,556 enlisted men. Officers retired for disability averaged 50.5 years of age and 23.7 years of service, but a large percentage of the enlisted men were young and had served only a short time. In 91.4 per cent of the enlisted men the disability existed prior to enlistment. The leading cause of discharge as for several years past was dementia praecox. The tendency to this disease is inherent in many persons, but a satisfactory method of preventing them from enlisting in the army has not yet been devised, the report comments. As much may be said of tuberculosis and constitutional psychopathic states, which were third and fourth on the list of causes for discharge. In the case of flat foot, however, which was second on the list, it would seem that the standards of physical examinations should be more rigidly adhered to at the time of enlistment, in the opinion of the surgeon general.

Venereal diseases are costing the army more than a million and a half dollars a year for treatment and are responsible for 18 per cent of the noneffectiveness due to disease. Although conditions with respect to these diseases have improved greatly, no reason is seen for relaxation of control measures; rather they should be strengthened, the report said.

Pneumonia was the leading cause of death among diseases, as it was in 1936. There were 871 cases. Influenza increased, as it has each year since 1933; in 1937 there were 7,226 admissions for this cause. Admissions for tuberculosis reflect the downward trend in the general population, it was pointed out; there were 271 admissions, 170 discharges for disability and 17 deaths in 1937. An abrupt increase in typhoid was noted, fourteen cases compared with four cases in 1935 and 1936. There were no cases of rabies, anthrax, tetanus or smallpox.

Diseases of the digestive system caused more admissions to sick report than any other. Tonsillitis and pharyngitis are included in this group and caused 40 per cent of the admissions. Appendicitis showed the highest admission rate in ten years, with 2,224 admissions, 2,100 appendectomies and twenty-three deaths.

More than 900 men were absent from duty each day, on the average, during 1937 because of injuries. This amounted to 18 per cent of all admissions to sick report and 19 per cent of the noneffectiveness. Athletics, falls and automobiles were responsible for 43 per cent of the cases. The report predicted that as the use of motor vehicles increases in the army injuries and deaths caused by them will increase. Military vehicles were involved in only eleven of the 102 deaths, but the number was twice as large as in 1936, it was pointed out.

It is believed that carelessness is the chief factor in automobile accidents and falls. Lack of care in selection of athletes, in provision of equipment and in the maintenance of playing fields may contribute to athletic injuries, the report suggested.

The number of persons invalided home from overseas garrisons was 840, twenty-one of whom were officers. Diseases of the circulatory system were responsible for one third of the cases among officers; among enlisted men the principal causes were flat foot, venereal diseases, dementia praecox, constitutional psychopathic states, psychoneurosis and tuberculosis.

The patient-day cost for the fiscal year 1938, computed on figures furnished by Walter Reed, Fitzsimons, Letterman, Army and Navy and William Beaumont General hospitals and the station hospital at Fort Sam Houston, Texas, was $5.09. The number of beds available and occupied in general hospitals June 25, 1938, was 5,359.

With the addition of fifty medical officers authorized by Congress in 1937, the present commissioned personnel is 1,083. The enlisted strength of the medical personnel as of June 30, 1938, was 8,291. The Medical Department Reserve Corps had a strength of 15,061 June 30.

Recent efforts to modernize the equipment of the medical department have been directed toward development of a mobile surgical hospital. Four semitrailers with van type bodies have been procured. Two of these are being fitted as operating room vans, one as a sterilization unit and one as a kitchen. It is hoped to add an additional van to complete a basic operating unit in order that the complete equipment may be demonstrated at the International Congress of Military Medicine and Pharmacy in May in Washington and later at the New York World's Fair.

During the year of this report a new main hospital building was completed at Fort Sam Houston at a cost of $1,347,400. A fund of $200,000 was appropriated for a hospital of 116 beds and barracks for the medical detachment at Fort Knox, Kentucky.

A section on syphilis was established in the professional service division of the surgeon general's office, with Major L. L. Gardner in charge. The Army Medical Museum reported 4,491 accessions during the year, an increase over previous years. The report says that the museum has taken its place as one of the popular sights of Washington and 100,781 persons visited it in the year. Loan sets of slides from the registry of pathology in the various specialties are in constant demand, especially by physicians preparing for the examinations of the boards of medical specialties. The Army Medical Library added 4,104 bound volumes to its collection and finished the third volume of the fourth series of the Index Catalogue. The fourth volume containing literature catalogued under the letter D was reported to be under way. Congress authorized construction of a new building for the museum and the library, but funds were not appropriated.

Foreign Letters

LONDON

(From Our Regular Correspondent)

March 1, 1939.

Report of the Medical Research Council

Twenty-five years ago the government decided to promote medical research by setting up the Medical Research Committee, which in 1920 became the Medical Research Council. The report for 1937-1938 refers to the great increase in medical investigation in this period, to which is due an improved level of health. The whole trend of medicine in the present century has been toward study of the basic factors of disease, and many maladies can now be cured or controlled by specific remedies. But there is often delay in the application of discoveries.

THE PREVENTION OF DIPHTHERIA

A striking example is the lack of public recognition of the value of preventive inoculation against diphtheria, which is the commonest single cause of death among children. In 1937 there were 61,339 cases in England and Wales, with 2,963 deaths, nearly all in children between the ages of 1 and 15 years. Yet since 1929 preventive inoculation has proved increasingly successful and in parts of America diphtheria has practically disappeared. In Hamilton, Ont., with a population of 175,000, diphtheria has not been diagnosed once in the past five years, while in Quebec, where inoculation was not used, the deaths from diphtheria were even more numerous in 1936 than in 1927. In New York City inoculation has reduced the mortality for diphtheria in children to 2.1 deaths per hundred thousand persons, while the figure was 31.8 in England and Wales.

CHRONIC PULMONARY DISEASE AMONG COAL MINERS

In recent years it has become apparent that coal miners are subject to disabling chronic pulmonary disease that does not come within the accepted definition of silicosis, which it resembles clinically but from which it differs radiologically. In silicosis the lungs, on radiologic examination, show shadows indicating distinct nodulation, but in the condition referred to this appearance is absent and instead there may be a variety of other shadows, the significance of which, in relation to the occurrence and progress of disability, is not clearly understood. Apart from the disabling character of the disease, the matter is of economic importance, for compensation is given for silicosis but not for other forms of pulmonary disease. The council has undertaken to investigate the subject for which it has chosen the anthracite coal field of South Wales. The problem is difficult, for pulmonary disease among coal miners cannot easily be related to particular working conditions, as there are so many factors which vary from place to place. The council is gratified to be responsible for a fine example of team work, which involves the cooperation of physicians, chemists, physicists, statisticians, geologists and mine inspectors.

THE RADIUM TREATMENT OF CANCER

Until recently the only ways to apply radium were interstitially or to the surface. A newer method, known as radium beam therapy or teleradium therapy, consists in the use of rays from a large mass of radium situated at a distance from the patient. In 1933 the council cooperated with the Royal Colleges of Physicians and Surgeons, the National Radium Commission and the Radium Institute in forming the Radium Beam Therapy Research. During the first four years of the research the use of the method was restricted to the treatment of cancer of the mouth, tongue, pharynx and larynx, in which the results have been encouraging. These sites were selected for the preliminary observations because they are accessible to radium therapy and, being comparatively superficial, permit the local effects of radium to be observed readily. In most of the cases the condition was advanced and the results compare favorably with the results of surgical intervention. On the other hand, the treatment produces a period of discomfort. New technical methods have been evolved through the cooperation of physicists and clinicians. It is clear that the method is capable of destroying accessible primary growths, and the main problem is a method for insuring the destruction of secondary growths. After a course of irradiation with a 5 Gm. unit, secondary growths usually disappear from the neck but, if present in the chest, escape destruction. In order to meet the situation work has recently been begun with a 10 Gm. unit. It is proposed to make a comparative study of the radium beam therapy and the high voltage roentgen therapy of cancer. Meanwhile there is already looming in the distance the therapeutic effect of neutrons and of temporarily radioactive substances, such as radiosodium. It is possible that both radium and the x-rays will be superseded by the cyclotron in the treatment of cancer by radiation and radioactive substances. Dr. F. G. Spear of the council's staff is at present in California, working with Professor Lawrence on the biologic effects of neutrons.

Ophthalmologic Congress

The annual congress of the Ophthalmological Society of the United Kingdom will begin April 20. Ophthalmologists from abroad are invited to all the meetings. Immediately preceding the congress, meetings will be held at the Royal Society of Medicine, 1 Wimpole Street, London, by the International Association for the Prevention of Blindness and the International Organization Against Trachoma. The International Association for the Prevention of Blindness will convene on April 19 at 2 p. m., and the application of the Credé method for the prevention of ophthalmia neonatorum in various countries will be discussed by speakers from home and abroad, including Dr. Conrad Berens of New York. The International Organization Against Trachoma will meet on April 19 at 4:30 p. m. to discuss the incidence and clinical type of trachoma in Europe and North and South America, that is in countries commonly considered to be nontrachomatous, and the treatment of trachoma by sulfanilamide and its congeners. Members of the congress are invited to these meetings.

A War Time Hospital Organization

Britain entered the great war without any military preparations for a catastrophe of that magnitude. If unhappily she should have to defend herself against aggression, she will be found to have made every possible preparation, especially for air attacks on the civilian population. The minister of health, Dr. Walter Elliot, has issued to all hospital authorities a memorandum explaining a comprehensive emergency scheme for a wartime hospital organization. In the course of the next few weeks every hospital will receive a notification explaining what part it is to play. The minister has been assisted by specialists appointed in accordance with the advice of the presidents of the Royal Colleges of Physicians and Surgeons. The basis of the scheme is the division of hospitals into different classes according to their intended uses. Room is to be made for the reception of casualties in one wing or block of most of the mental hospitals in the country, and a few mental hospitals are to be completely cleared of their ordinary patients, who will be transferred to other institutions, so as to provide some major units for the reception of casualties from the largest cities. It is proposed to link up casualty hospitals to each other in the more vulnerable areas and to selected hospitals farther out. The casualty hospitals would include the leading London hospitals, which would be denuded of their ordinary patients. Some of the institutions which are to act as base hospitals are to receive part of the valuable equipment now concentrated in the cities.

There are 371,500 hospital beds in England and Wales, not including 130,000 in mental hospitals. As these beds are almost

always fully occupied with the ordinary civilian sick, they would have to be substantially increased in the event of an emergency. At the outset there will be sent home all patients for whom institutional treatment is not essential except those whose homes are in areas to be evacuated. It is estimated that this would free from 30 to 50 per cent of the existing beds. In addition, patients in the danger areas would be transferred to outer areas and additional beds would be introduced into selected hospitals and institutions. Arrangements for distributing 80,000 beds are already in hand. If necessary, accommodation can be found by putting beds closer together in wards or by setting up others in ancillary buildings within hospital precincts. The effect would be to provide 300,000 beds for casualties, of which 200,000 would be available in the first twenty-four hours. But the minister appreciates that this may not be sufficient, and the government is exploring the possibility of using additional buildings for the expansion of hospitals in the danger areas and erecting huts on land adjacent to hospitals elsewhere.

Under the affiliation scheme the medical staffs of groups of affiliated hospitals will be divided into surgical teams and teams to be assigned to the appropriate hospitals. There are to be mobile surgical teams to deal with exceptional pressure wherever it may come. Where personnel is required beyond what can be given by affiliated hospitals, requests are to be made to the ministry of health and the Central Emergency Committee of the British Medical Association, which has already established a register of all physicians available. In advance of an emergency, individual doctors will be allotted to particular hospitals or groups of hospitals.

The Cancer Bill: Quack Advertising to Be Checked

In the House of Commons the minister of health, Dr. Elliot, stated that he proposed to appoint a subcommittee of the medical advisory committee to advise him on general principles with regard to the treatment of cancer. This subcommittee would consist of experts in surgery, medicine, gynecology, radium therapy, pathology and public health administration. A member moved amendments to strengthen the clause against the advertising of remedies for cancer. The prohibitory clause in the bill applied only to the person offering treatment and not to those who aided or abetted by the advertising. As pointed out in the *Times*, a quack residing outside the jurisdiction of English courts could order an advertisement by post and no one would be liable. All reputable newspapers had long refused to publish such advertisements and the others should be compelled to do so. For this reason the Newspaper Society had expressed complete approval of the amendments. These were passed by the house.

PARIS

(From Our Regular Correspondent)

Feb. 25, 1939.

The French League Against Rheumatism

The annual meeting of the French League Against Rheumatism was held in Paris Dec. 3, 1938. At the morning session operations for chronic rheumatic arthritis of the hip and gonorrheal rheumatism were demonstrated by Professor Mathieu and Dr. Padovani, who also showed a color film of arthroplastic resection of the hip.

At the afternoon session, papers were read on chronic gonorrheal rheumatism. The first of these was presented by Prof. Henri Gougerot, Florent Coste and Pierre Durel, who said that the chronic forms were not as well known as the acute forms. A striking feature of the chronic forms was that the relation between former gonorrhea and the arthritis was not always apparent. Frequently the existing arthritis seemed to be more directly related to acute nonspecific articular rheumatism, an intestinal infection, syphilis or tuberculosis.

In the second paper, Dr. F. Layani called attention to the nonspecific character, in general, of the treatment. For severe polyarthritis, drugs which act by raising the temperature are indicated, whereas for the subacute forms, preparations containing gold, as well as the neoarsphenamines, acridine salts and subcutaneous bacteriotherapy, have given satisfactory results. The use of the sulfanilamides has not been encouraging. Chronic gonorrheal rheumatism can never be controlled until local foci have been eliminated. If this can be accomplished by using the sulfanilamides and artificial heat, the affected joints should be massaged and given the benefit of early mobilization.

In a third paper, Drs. J. Surmont and G. Michon outlined the various types of physical therapy. For the localized forms of chronic gonorrheal arthritis, radiotherapy to combat the inflammatory reaction should be given. For the more generalized forms with acute or subacute onset, pyretotherapy with a temperature to 41 C. (105.8 F.) is indicated. When the onset has been more chronic, either irradiation in high doses or short wave treatment, also in high doses, gives the best results. In general the various forms of physical therapy should be employed.

In a fourth paper, Dr. Marcel Boppe said that before any operative correction of ankylosis was contemplated it was essential to eliminate a persisting urogenital or arthritic infection. Arthroplasty, especially of the knee, has been followed by excellent functional results, even though the radiographic changes, such as those of a degenerative hypertrophic osteoarthritis, are demonstrable postoperatively.

Jacques Forestier and Mlle. Certonciny reported having found evidences of a preceding gonorrheal infection in 44 per cent of fifty cases of spondylo-arthritis.

Dr. M. Pellet stated that, from the radiologic standpoint, gonorrheal arthritis fails to show any characteristic changes. One must consider rarefying osteitis, with hyperostosis and osteophytosis and numerous other changes in relation to the clinical history and laboratory observations.

Dr. Graber-Duvernay recommended the use of calcium gluconate for chronic gonorrheal coxitis. Several series are given of fifteen injections of 10 cc. of a 10 per cent solution, at the rate of five injections a week. After four or five such series no additional injections are given for a month.

Electrocardiographic Changes Due to Barometric Depression

The experimental study of the effects on the cardiovascular system of lowering of the atmospheric pressure as encountered by aviators at high altitudes is being carried out on an extensive scale at several of the aviation centers near Paris. Animals are placed in pneumatic caissons and the oxygen tension is lowered as needed so as to reproduce as closely as possible the atmospheric conditions met in aviation. At the Jan. 17, 1939, meeting of the Académie de médecine of Paris, the three cardiologists Prof. Charles Laubry, Dr. Jean Walser and Dr. Louis Deglaude reported their observations on dogs and rabbits on the electrocardiographic changes incident to atmospheric conditions at different altitudes. Their results differ in some respects from those published by other investigators.

At high altitudes, modifications of the monophase wave type as reported by Koch were never observed. After exposure to conditions similar to those found at altitudes of 10,000 meters, Cluze and his co-workers reported total cardiac fibrillation. This could not be corroborated by Laubry and his co-workers, who believe that their observations differ from those of the other investigators cited in the form and dose of the anesthetic which was employed and in the duration of the exposure to various altitude conditions.

The artificially produced electrocardiographic changes provoked by the same alterations of pressure under identical conditions are inconstant. The variations of the T wave are more constant. At an altitude of 1,500 meters, there is a slight increase of amplitude, which usually diminishes at altitudes between 4,000 and 8,000 meters, to increase when an altitude of 10,000 meters is reached. It then increases to such an extent that it can exceed in amplitude that of the R wave. The heart appears to possess a remarkable adaptability to sudden changes in atmospheric pressure as observed in almost vertical upward flight. The more important alterations of the electric curve are observed in experimental depressions which correspond to altitudes above 8,000 meters (about 25,000 feet), especially when an airplane is obliged to remain at that altitude for a prolonged interval.

Birth Rate Continues to Decrease

The population of France showed a sharp decline during the first nine months of 1938 according to official statistics. Deaths exceeded births by 27,365, while in 1937 there were eleven more births than deaths. The number of marriages decreased from 202,811 in the first nine months of 1937 to 200,160 in the same period of 1938. The number of deaths increased from 471,139 in the first nine months of 1937 to 494,107 in the same period of 1938. This increase in mortality is chiefly responsible for the decrease in the natality rate, i. e. relation of births to deaths, because there were 471,150 births in the first nine months of 1937, as compared with 466,742 births in the same period of 1938.

BERLIN

(From Our Regular Correspondent)

Feb. 13, 1939.

Effects of Alcohol, Coffee and Tobacco on Motorists

Among motorists it is frequently assumed that the harmful effects of alcoholic beverages can be abolished by the drinking of coffee. Professor Dr. Mueller, director of the Institute of Forensic Medicine of Heidelberg University, has determined from numerous experiments that this opinion is completely wrong. The persons submitting to the tests drank substantial quantities of beer and then partook of very strong coffee (40 Gm. of coffee beans of superior quality in 400 cc. of boiling water, allowed to stand for fifteen minutes). Subsequent tests in no instance disclosed any change in the alcoholic content of the blood. However, further observation of the subjects showed an alleviating influence on the subjective and objective effects of alcohol. This was manifested from fifteen to thirty minutes after ingestion of the coffee; the subjects no longer felt fatigued, the gait was steadier and indistinct speech had disappeared. Then too the reaction time, namely the interval between the observation of a circumstance and the necessary response, was diminished, although the normal interval was not reached. However, later on after the consumption of coffee, the subjects experienced a pronounced feeling of relaxation and uncertainty, which rendered them unfit for further experimentation. According to these tests the drinking of coffee produced only a rather brief recovery. If the subject was accustomed to coffee drinking, the diminution of the sobering effect was remarkable. By and large, if coffee sobered an erstwhile intoxicated person, the sobriety was of brief duration and was followed by such pronounced relaxation that, as Mueller says, one can by no means assume the responsibility for permitting drivers of motor vehicles to indulge freely in alcoholic beverages on the assumption that they can be sobered by subsequent drinking of coffee. The sobering effect of coffee may be explained as due to the contraction of the cerebral vessels and consequent diminished blood perfusion of the brain and the central nerve cells.

Whereas caffeine produces a remission of the signs of alcoholic intoxication, the nicotine contained in tobacco seems to exacerbate the effects of alcohol. The basis for this circumstance is assumed to be a dilatation of the cerebral vessels, and this in turn, on account of the concomitant increase in blood perfusion, leads to a concentration of alcohol in the nerve cells. If coffee drinking after consumption of alcohol is accompanied by the smoking of cigarets, the sobering effect of the coffee will be in large part offset by the nicotine.

The Pharmacology of Short Waves

Fritz Hildebrandt, professor of pharmacology at Giessen, conducted investigations of the pharmacology of short waves. Previously only an increased thermic effect in the tissue was demonstrated. Since it is to be assumed that chemical processes are also produced, the author first examined the histamine content of the blood after treatment with the short wave apparatus according to Schliephake's method (wavelength 3.5 meters). These experiments were performed on dogs; the thorax was exposed to the short wave current for from one half to one hour. At various intervals within the next twenty-four hours, specimens of blood were taken and the histamine content was determined. In some of the animals an increase of several hundred per cent was observed to take place directly and a return to normal would occur within the next two to four hours. In others the histamine value was not elevated immediately, but rather the maximum was reached after some two hours and the return to normal value then ensued gradually in the next few hours. Diathermic tests yielded virtually the same results. Accordingly the influence of the histamine content of the blood must be attributed to the pronounced thermic effect of the short wave current. The histamine values should be rather large, since tests in which single injections of histamine were used in doses of 0.1 mg. per kilogram of body weight disclosed that the histamine had disappeared quantitatively from the blood at the end of five minutes.

Regulation of Radioactive Waters

New legislation provides for strict regulation of the advertising of the products of those medicinal springs which are entitled to be termed "radiumbäder" (radium baths). Proprietors of such springs are required to measure the radioactivity of all spring water and other medicinal products which are advertised as radioactive. These tests must be made at regular quarterly intervals corresponding to the seasons of the year. All advertising matter published since Jan. 1, 1939, relative to radioactive therapeutic substances must contain exact numerical data on the radioactivity of the products. The proper figure should be reckoned as the average of at least four measurements made within a certain year and at all seasons of the year. Thus it is not permissible to furnish numerical data with regard to medicinal springs which, although literally accurate, fail to take into account the natural variations in radioactivity.

Professor Schoen Called to Göttingen

As previously reported, Prof. Hermann Straub, Göttingen ordinarius of internal medicine, died suddenly of heart disease while traveling. Now called to succeed him is Prof. Rudolf Schoen, Leipzig ordinarius and director of the university policlinic of internal medicine. Professor Schoen is 47 years old and has had a distinguished training. He is a pupil of pathologist Borst, pharmacologist Wieland, internist Ernst von Romberg and, in particular, internist Morawitz. When the last named left Würzburg for Leipzig, Schoen went with him. Schoen's works deal with pharmacologic-clinical topics, for example problems of sleep, as well as with studies in pathologic physiology. As the director of the clinic at Göttingen has always been a distinguished internist, the choice of Schoen represents a signal recognition of his achievements.

The Number of Cremations

In the German reich during 1937, a total of 78,332 cremations took place in 117 crematories. This means that the cadavers of 9.9 per cent of all persons dying in that year were incinerated.

Professor Weygandt Is Dead

Wilhelm Weygandt, for many years a psychiatrist in Hamburg, died at the age of 68 at Wiesbaden, where he had lately resided. When Weygandt decided to devote himself to psychiatry he had already acquired an unusually broad educational background, for he had been a student of theology, philosophy, psychology, languages and art. From 1896 he specialized in psychiatry and contributed importantly to this field. After extensive travel in connection with his studies, he became extraordinary professor in Würzburg in 1904 and in 1908 became director of the great Hamburg-Friedrichsberg hospital. At the foundation of Hamburg University in 1919, Weygandt was appointed to the chair of psychiatry. He concerned himself with many problems of his special field and published numerous works, some of which extended into other domains. He was most highly regarded abroad for his work on juvenile feeblemindedness.

BUCHAREST

(From Our Regular Correspondent)

Jan. 23, 1939.

Plethora of Physicians in Sofia

Sofia, the capital of Bulgaria, has a population of 250,000 and there are 800 registered practicing physicians. Accordingly the proportion of physicians to population is 1 : 311. Since there is a shortage of physicians in the rural districts, the government contemplates having one district physician, paid by the state, in each area with a radius of 23 miles.

The System of Medical Chambers

The Albanian legislature has drafted a bill which regulates medical practice and which is destined to introduce into Albania the system of medical chambers. Formerly the quacks, here called "hodjas," could operate freely, but the new law proposes imprisonment and fines ranging from $25 to $100.

Doctor Honoris Causa

At the university of Bordeaux Nov. 29, 1938, Constantin Daniel, member of the Scientific Academy of Paris and Rome, received the degree of doctor honoris causa. Professor Daniel is of Rumanian origin and is well known in France as a surgeon whose literary work aroused great interest in the entire medical world. On this occasion he lectured on scientific cooperation between France and Rumania and between the Bordeaux and Bucharest universities. He also gave an address on the influence which French medical science has had on medical science in Rumania.

Registration of First Year Medical Students

A matriculation certificate is necessary for admission to medical courses, and a foreign certificate is valid only when the minister of public instruction finds it equivalent to the domestic certificate, which embraces the subjects taught in the Rumanian secondary schools. Admission to the first year is temporary, as this year is regarded as a trial year. To qualify for admission the applicant must hand to the dean of the faculty (1) a birth certificate, (2) a certificate of citizenship, (3) a certificate of matriculation, (4) in the case of those under age, the written approval of parents or guardians, (5) a health blank issued by the hygienic institute of the faculty, and (6) the choice of curriculum as well as Bucharest address and three photographs. Admission is preceded by examinations, conducted by a committee of three members appointed by the council of the faculty, in physicochemistry, zoology, botany, anatomy, the physiology of man and general biology, but only from the material prescribed for the upper classes of the secondary schools. These examinations are written and oral. For the written examinations two hours is allowed. Those who pass are admitted only if there are accommodations, as the number of first year students is limited. The examination fee is 100 lei (about $1). Recently a number of families returned from America with sons who were born in the United States and had attended grammar and secondary schools there. Such young men need to learn perfect Rumanian before applying for admittance.

Colon Bacillus Infections of the Urinary Passages

In the experience of the Cluj urologic clinic, mandelic acid has been found highly efficacious against the colon bacillus. Recovery has taken place in 85 per cent of the cases. Among twenty-three cases, treatment of from three to four days was sufficient in seventeen cases, of five days in four cases and of eight days in two cases until the subjective symptoms completely and the objective symptoms almost entirely abated. The patients tolerated ammonium mandelate much better than calcium mandelate. Prior to taking the medicine it is advisable to eat a piece of bread or biscuits, as the drug on an empty stomach is likely to cause discomfort in the stomach. Given in milk or cocoa the drug is not only more palatable but is much better borne. The dose employed at the clinic in general is 12 Gm. daily, but even 9 Gm. a day has proved efficacious. An implicit requirement is limitation of fluids. The period of treatment can be decidedly shortened by reducing the daily quantity of urine to from 500 to 800 cc. In the experience of the chief urologist, mandelic acid therapy is harmless. Renal conditions affecting the renal parenchyma with limitation of renal function contraindicate the use of mandelic acid.

Marriages

JEREMIAH W. KERNER, Jersey City, N. J., to Miss Jeannette V. Hermann of Omaha in Los Angeles, January 20.

COLUMBUS HASSELL PORTER, Memphis, Tenn., to Miss Mary Katherine Ashley at Marion, Ark., Dec. 13, 1938.

WILLIAM HENRY TURNLEY, Stamford, Conn., to Mrs. Hetia Hoffman Stanhope at Riverside, March 2.

LAWRENCE SHINABERRY, Fort Wayne, Ind., to Miss Isabelle McMahan of Alexandria, Nov. 30, 1938.

FRANCIS H. KEHLNHOFER, Wauwatosa, Wis., to Miss Mildred Moldenhauer of Lake Geneva, January 7.

THOMAS ALEXANDER PETERSON, Savannah, Ga., to Miss Ruth Houston of Slyvester, Dec. 3, 1938.

LANDON BOYCE SNAPP, Bristol, Tenn., to Miss Jennie Wood Meade of Mendota, Va., February 18.

HAROLD O. SCHNEIDER, Monroe, Wis., to Miss Frances Louise Warner of Lincoln, Neb., January 7.

CLEMENT E. LOCKWOOD, Holly, Mich., to Mrs. Elsie Knisley of Romeo, in Fenton, Nov. 5, 1938.

ROBERT L. ARMINGTON to Miss Maryanna Loidl, both of Anderson, Ind., Nov. 10, 1938.

JESSE M. SHACKELFORD to Miss Bertha Bowles, both of Martinsville, Va., February 9.

ROY M. PEACOCK, Mobile, Ala., to Miss Mary Belle Forrest of Baltimore, Dec. 20, 1938.

MARY ELLEN NEVILLE to Mr. Edward Bielefeld, both of Milwaukee, Dec. 31, 1938.

JACK MCKITTRICK to Miss Mary Seal, both of Washington, Ind., Nov. 20, 1938.

CHARLES N. LEWIS to Miss Mildred Lee, both of Madison, Wis., Dec. 30, 1938.

Deaths

Daniel Percy Hickling ✠ Washington, D. C.; Georgetown University School of Medicine, Washington, 1884; professor of psychiatry and neurology and formerly clinical professor at his alma mater; an Affiliate Fellow of the American Medical Association; member of the American Psychiatric Association, Washington Society for Mental and Nervous Diseases, National Psychopathological Association and the Washington Academy of Sciences; member of the committee on arrangements of the International Congress of Mental Hygiene; alienist for the District of Columbia, 1914-1933; professor of medical jurisprudence, National University Law School; formerly attending specialist, neuropsychiatric service, U. S. Veterans Bureau; served as contract surgeon for the U. S. Army; aged 75; served in various capacities on the staffs of the Providence Hospital, Gallinger Municipal Hospital, St. Elizabeths Hospital and the Georgetown University Hospital, where he died, January 10, of pneumonia, following the amputation of a leg.

Elwood Emerson Downs ✠ Woodbury, N. J.; Hahnemann Medical College and Hospital of Philadelphia, 1913; representative of the Section on Radiology to the Scientific Exhibit of the American Medical Association; past president and secretary of the Gloucester County Medical Society, and in 1938 received the society's medal of honor for his contributions as poet laureate of the physicians of Gloucester County; fellow of the American College of Radiology; past president of the Philadelphia Roentgen Ray Society and the Radiological Society of New Jersey; member of the American Roentgen Ray Society and the Radiological Society of North America; president of the board of education; radiologist to the Underwood Hospital, Woodbury; Jeanes Hospital, Philadelphia, and the Salem (N. J.) County Memorial Hospital; author of numerous articles; aged 48; died suddenly, March 18, of embolism following an appendectomy.

George Van Ness Dearborn, Maplewood, N. J.; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1893; member of the American Psychiatric Association, American Philosophical Society, American Psychological Association and other scientific societies; in 1899 assistant in physiology at the Harvard University Medical School, Boston; at various times professor, and director of the laboratory of physiology, Tufts College Medical and Dental schools; consulting psychologist to the Forsyth Dental Infirmary for Children, Boston; served during the World War; on the staffs of various veterans administration facilities; at one time on the staffs of the Boston City Hospital and the Augusta (Me.) State Hospital; author of "Textbook of Human Physiology," 1908; editor of "Psychological Index"; aged 69; died, Dec. 12, 1938, in New York.

Carl Boettiger ✠ Flushing, N. Y.; Cornell University Medical College, New York, 1903; member of the House of Delegates of the American Medical Association in 1935-1936; fellow of the American College of Physicians; member of the Society of American Bacteriologists and the American Society of Clinical Pathologists; past president of the Medical Society of Queens County; served during the World War; clinical professor of medicine at the New York University College of Medicine; member of the city board of health; visiting physician to St. John's Long Island City (N. Y.) Hospital and the Mary Immaculate Hospital, Jamaica, N. Y.; visiting physician and director of the medical service, Queens General Hospital; aged 59; died, February 1, at his home in Forest Hills of coronary thrombosis.

Donald Maclean ✠ Reno, Nev.; University of Edinburgh Faculty of Medicine, Edinburgh, Scotland, 1898; fellow of the American College of Surgeons; past president of the Washoe County Medical Society; veteran of the Spanish-American War; surgeon for the Leadville, Colo., mines, 1900-1905; chief medical advisor of the Nevada Industrial Commission, 1913-1927; physician to the Nevada State Prison, 1910-1923; surgeon for the Nevada State Orphans' Home; chief of the staff of St. Mary's Hospital; member of the board of trustees of the Washoe General Hospital; aged 66; died, January 4, of coronary thrombosis.

Ellison Lloyd Ross ✠ Waukegan, Ill.; Northwestern University Medical School, Chicago, 1918; professor of otolaryngology at his alma mater; member of the American Academy of Ophthalmology and Oto-Laryngology and the American Otological Society; fellow of the American College of Surgeons; attending otolaryngologist to the Passavant Memorial Hospital, Chicago, and Veterans' Administration Facility, North Chicago; on the staffs of the Victory Memorial and St. Therese's hospitals, Waukegan; aged 57; died, Dec. 21, 1938, of heart disease.

Byron Ulysses Richards ✠ Pawtucket, R. I.; Dartmouth Medical School, Hanover, N. H., 1893; an Affiliate Fellow of the American Medical Association; formerly commissioner of health, state registrar and executive secretary of the Rhode Island State Board of Health; past president of the Federation of State Medical Boards of the United States; formerly vice president of the State and Provincial Health Authorities of North America; for many years police surgeon and city physician; aged 72; died, February 15, of mitral insufficiency.

William Cosgrove Hunsicker, Philadelphia; Hahnemann Medical College and Hospital of Philadelphia, 1895; clinical professor of urology at his alma mater; fellow of the American College of Surgeons; director of health of Philadelphia; for many years member of the state senate; urologist to the Hahnemann Medical College and Hospital, St. Luke's and Children's hospitals, Philadelphia, Homeopathic State Hospital, Allentown, and consulting urologist to the Pottstown (Pa.) Homeopathic Hospital; aged 65; died, January 10, of heart disease.

Harry Stearns Willard ✠ Paterson, N. J.; New York Homeopathic Medical College and Hospital, New York, 1896; fellow of the American College of Surgeons; past president of the Passaic County Medical Society; for many years member of the board of education of Ridgewood; ophthalmologist to the "Bergen Pines," Oradell; Paterson General Hospital and Paterson Eye and Ear Infirmary, Paterson, and Good Samaritan Hospital, Suffern, N. Y.; aged 62; died, Dec. 11, 1938, at his home in Ridgewood of chronic myocarditis.

Ephraim Roland Mulford ✠ Burlington, N. J.; University of Virginia Department of Medicine, Charlottesville, 1903; member of the House of Delegates of the American Medical Association, 1929-1937; past president of the Medical Society of the State of New Jersey and the Burlington County Medical Society; was surgeon to the Pennsylvania Railroad in his district; on the staff of the Burlington County Hospital, Mount Holly; aged 58; died, March 10, of coronary occlusion while visiting friends in Charlottesville, Va.

Joseph Manuel Rector ✠ Jersey City, N. J.; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1893; attending gynecologist to the Jersey City Medical Center; connected with the Jersey City Hospital since 1893; member of the state board of medical examiners; consulting surgeon gynecologist to the North Hudson Hospital and New Jersey State Hospital at Greystone Park; served during the World War; aged 71; died, January 10, of arteriosclerotic heart disease.

Lyman Augustus Brewer, Toledo, Ohio; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1887; member of the Ohio State Medical Association; fellow of the American College of Surgeons; at one time dean and professor of surgery, Toledo Medical College; served during the World War; chief of staff, Mercy Hospital; consulting surgeon to the Women's and Children's Hospital; on the staff of St. Vincent's Hospital; aged 72; died, January 16, of heart disease.

Mary O'Malley, Buffalo; Niagara University Medical Department, Buffalo, 1897; fellow of the American College of Physicians; past president of the Medical Women's National Association; associate in psychiatry at the George Washington University School of Medicine, 1922-1929; formerly clinical director in charge of the women's service at St. Elizabeths Hospital and consultant in psychiatry at the Gallinger Municipal Hospital; aged 71; died, January 30, of cerebral hemorrhage.

Leopold Jaches ✠ New York; Columbia University College of Physicians and Surgeons, New York, 1903; formerly a lawyer; clinical professor of radiology at his alma mater; member and past president of the American Roentgen Ray Society; member of the Radiological Society of North America and American College of Radiology; served during the World War; aged 65; on the staff of the Mount Sinai Hospital, where he died, January 23.

Martin E. Sargeant ✠ Ticonderoga, N. Y.; University of Vermont College of Medicine, Burlington, 1908; at various times health officer of the towns of Putnam, Hague and Ticonderoga; health examiner in the local schools, and also acted in a similar capacity in the schools at Putnam and Hague; formerly on the staff of the Moses Ludington Hospital; aged 53; died, Dec. 30, 1938, of pulmonary tuberculosis and diabetes mellitus.

Louis Franklin ✠ Jersey City, N. J.; Columbia University College of Physicians and Surgeons, New York, 1903; fellow of the American College of Surgeons; surgeon to the Margaret Hague Maternity Hospital and co-founder and president of staff of the Fairmount Hospital, Jersey City; president of the staff of the Hudson County Hospital, Secaucus; aged 56; died, Dec. 20, 1938, of heart disease and hypertensive nephritis.

Ralph Dumphry Simons ⊕ Gardiner, Maine; Medical School of Maine, Portland, 1899; past president of the Kennebec County Medical Society; member of the board of registration of medicine; formerly member of the state legislature; for many years school physician; aged 61; on the staff of the Gardiner General Hospital, where he died, Dec. 25, 1938, of intestinal obstruction due to adhesions.

Edward S. Newell ⊕ Pelham Manor, N. Y.; University of the City of New York Medical Department, 1892; on the courtesy staff of the Mount Vernon (N. Y.) Hospital since 1910, and on the attending staff from 1890 to 1910; for many years on the associate staff and attending staff of the New Rochelle (N. Y.) Hospital; aged 70; died, Dec. 12, 1938, of coronary thrombosis.

Michael Simon Granelli, Hoboken, N. J.; Jefferson Medical College of Philadelphia, 1906; member of the Medical Society of New Jersey; veteran of the Spanish-American and World wars; school physician; on the staff of St. Mary's Hospital; aged 57; died, Dec. 22, 1938, in the Bayonne (N. J.) Hospital of postoperative pneumonia and carcinoma of the bladder.

William James Adams ⊕ Omaha; Creighton University School of Medicine, Omaha, 1924; instructor in surgery and at various times assistant in anatomy and instructor in medicine at his alma mater; on the staff of the Creighton Memorial St. Joseph Hospital; served during the World War; aged 40; died, Dec. 21, 1938, of hypertension and cerebral hemorrhage.

Frank Joseph Savage ⊕ Cleveland; Western Reserve University School of Medicine, Cleveland, 1928; demonstrator in medicine at his alma mater; on the visiting staffs of the Deaconess Hospital, Grace Hospital and St. Vincent Charity Hospital; aged 38; died, Dec. 10, 1938, of adynamic ileus, partial intestinal obstruction and ulcerative colitis.

Levi Franklin Wagner, Reading, Pa.; University of Vermont College of Medicine, Burlington, 1888; Medico-Chirurgical College of Philadelphia, 1890; member of the Medical Society of the State of Pennsylvania; formerly county coroner and prison physician; aged 75; died, Dec. 14, 1938, in the Reading Hospital of cardiac decompensation.

Byron Coleman Meacher, Portage, Wis.; Rush Medical College, Chicago, 1880; member of the State Medical Society of Wisconsin; fellow of the American College of Surgeons; chief of staff, St. Savior's General Hospital; associate member of the staff, St. Mary's Hospital, Columbus; aged 81; died, Dec. 15, 1938, of Parkinson's disease.

Henry G. Chritzman ⊕ Greencastle, Pa.; Jefferson Medical College of Philadelphia, 1926; on the staffs of the Washington (Pa.) County Hospital, Waynesboro (Pa.) Hospital and the Chambersburg (Pa.) Hospital; member of the school board; aged 37; died, Dec. 10, 1938, in the Jefferson Hospital, Philadelphia, of carcinoma.

Edgar Quinby Bullock, Wilmington, Del.; Hahnemann Medical College and Hospital of Philadelphia, 1905; member of the Medical Society of Delaware; formerly secretary of the Delaware Homeopathic Board of Medical Examiners; on the staff of the Homeopathic Hospital; aged 57; died, February 8, of coronary thrombosis.

Lewis Olds Tayntor ⊕ Conneaut Lake, Pa.; University of Maryland School of Medicine, Baltimore, 1926; formerly connected with the Maryland State Health Department as deputy state health officer of three counties; on the staff of the Meadville (Pa.) City Hospital; aged 53; died, Dec. 28, 1938, of cerebral hemorrhage.

William Reid Thompson, Mackville, Ky.; Kentucky University Medical Department, Louisville, 1905; member of the Kentucky State Medical Association; past president of the Washington County Medical Society; bank president; aged 62; died, Dec. 24, 1938, in the A. D. Price Memorial Hospital, Harrodsburg.

Robert Roy Robinson, Hallsville, Mo.; University of Missouri School of Medicine, Columbia, 1901; member of the Missouri State Medical Association; at one time health officer of Grant County, New Mexico, and Boone County, Mo.; aged 59; died, Dec. 23, 1938, in the Barnes Hospital, St. Louis, of tuberculosis.

Edward Gager Fox, Wethersfield, Conn.; University of the City of New York Medical Department, 1883; member of the Connecticut State Medical Society; health officer for fifty years; formerly physician to the state prison; aged 79; died, Dec. 26, 1938, of cerebral thrombosis, arteriosclerosis and diabetes mellitus.

William Truman Stone, Park Rapids, Minn.; Hahnemann Medical College and Hospital, Chicago, 1882; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1898; at various times member of the state legislature; aged 83; died, Dec. 26, 1938, of angina pectoris.

Walter C. Ashworth ⊕ Greensboro, N. C.; College of Physicians and Surgeons, Baltimore, 1892; past president of the Guilford County Medical Society; on the staff of the Glenwood Park Sanitarium and formerly owner; aged 70; died, Dec. 16, 1938, in the Wesley Long Hospital of carcinoma of the bladder.

Willard Clark Sanford ⊕ Chicago; Chicago Medical College, 1890; formerly associate professor of surgery, University of Illinois College of Medicine; fellow of the American College of Surgeons; on the staff of St. Elizabeth's Hospital; aged 73; died, Dec. 12, 1938, of coronary thrombosis and hypertension.

Henry M. Ogilbee, Manitou Springs, Colo.; Western Reserve University Medical Department, Cleveland, 1882; member of the Colorado State Medical Society; at various times mayor; aged 82; died, Dec. 6, 1938, in the Beth El Hospital, Colorado Springs, of carcinoma of the urinary bladder.

Maly Emanuel Renner, Lagro, Ind.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1881; member of the Indiana State Medical Association; aged 78; died, Dec. 12, 1938, in the Wabash County Hospital, Wabash, of injuries received when struck by an automobile.

Arey Covington Everett ⊕ Rockingham, N. C.; University of Maryland School of Medicine, Baltimore, 1897; secretary and past president of the Richmond County Medical Society; for many years a member of the county board of health; aged 65; died, Dec. 26, 1938, of coronary thrombosis.

Thomas McCullough Maxwell ⊕ Butler, Pa.; Western Pennsylvania Medical College, Pittsburgh, 1903; for many years member of the board of health and school board; formerly on the staff of the Butler County Memorial Hospital; aged 60; died, Dec. 7, 1938, of cerebral hemorrhage.

John Kavanaugh Bullock ⊕ Jackson, Miss.; Tulane University of Louisiana School of Medicine, New Orleans, 1926; member of the American Academy of Pediatrics; formerly vice president of the Mississippi State Pediatric Society; aged 39; died, Dec. 26, 1938, of cerebral hemorrhage.

David William Van Camp, Plainfield, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1898; past president of the Cumberland County Medical Society; on the staff of the Carlisle (Pa.) Hospital; aged 67; died, Dec. 30, 1938, of arteriosclerosis and hypertension.

Edward Loring Marr ⊕ Melrose, Mass.; Tufts College Medical School, Boston, 1911; veteran of the Spanish-American War; formerly school physician; on the staff of the Melrose Hospital; aged 61; died, Dec. 17, 1938, in the Middlesex County Sanatorium of pulmonary tuberculosis.

Maggie Letitia McCrea, Sterling, Kan.; Northwestern University Woman's Medical School, Chicago, 1891; member of the Kansas Medical Society; past president of the Rice County Medical Society; aged 74; died, Dec. 19, 1938, in the Sterling Hospital of carcinoma of the stomach.

Joseph Irwin France ⊕ Port Deposit, Md.; College of Physicians and Surgeons, Baltimore, 1903; formerly state senator and United States Senator; at one time secretary of the Medical and Chirurgical Faculty of Maryland; aged 65; died, January 26, of chronic myocarditis.

George McClelland Scott, Waynesburg, Pa.; Western Pennsylvania Medical College, Pittsburgh, 1891; member of the Medical Society of the State of Pennsylvania; for several years member of the school board; aged 73; died, Dec. 9, 1938, of diabetes mellitus and pancreatitis.

Edward Whitfield Tolley, Grand Rapids, Mich.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1902; member of the Michigan State Medical Society; aged 68; died, Dec. 17, 1938, in St. Mary's Hospital of cerebral hemorrhage.

Marion Whitacre ⊕ Cincinnati; Medical College of Ohio, Cincinnati, 1899; formerly clinical instructor in medicine at his alma mater; served during the World War; for many years on the staff of the Christ Hospital; aged 67; died, Dec. 3, 1938, of myocarditis and arteriosclerosis.

Lenus Albert Carl, Newport, Pa.; Baltimore Medical College, 1907; member of the Medical Society of the State of Pennsylvania; formerly secretary of the Perry County Medical Society; aged 60; died, Dec. 1, 1938, in the Harrisburg (Pa.) Hospital of coronary thrombosis.

Charles Edward Holleman, Winston-Salem, N. C.; Jefferson Medical College of Philadelphia, 1932; member of the Medical Society of the State of North Carolina; on the staff of the City Memorial Hospital; aged 34; died, Dec. 20, 1938, of pulmonary tuberculosis.

James J. Cavaney, Milwaukee; Rush Medical College, Chicago, 1879; member of the State Medical Society of Wisconsin; formerly on the staffs of the Milwaukee County Hospital and the Misericordia Hospital; aged 85; died, Dec. 30, 1938, of arteriosclerosis.

Ulysses Irenaeus Tope, Lamartine, Ohio; Ohio Medical University, Columbus, 1895; member and past president of the county board of health and member of the local board of education; aged 68; died, Dec. 15, 1938, following an operation for sarcoma of the sacrum.

Clarence William Weller, Austin, Texas; University of Texas School of Medicine, Galveston, 1913; member of the State Medical Association of Texas; served during the World War; aged 55; died, Dec. 5, 1938, of peritonitis following intestinal obstruction.

John Nicholas Baskett, Hannibal, Mo.; Bellevue Hospital Medical College, New York, 1879; member of the Missouri State Medical Association; on the staff of the Levering Hospital; at one time mayor; aged 85; died, Dec. 29, 1938, of coronary thrombosis.

Grover Cleveland McCormack, Joplin, Mo.; St. Louis College of Physicians and Surgeons, 1910; served during the World War; aged 49; died, Dec. 21, 1938, in the Veterans Administration Facility, Fayetteville, Ark., of pulmonary edema and nephritis.

George W. Pfromm ⊕ Philadelphia; Medico-Chirurgical College of Philadelphia, 1894; formerly assistant professor of therapeutics at his alma mater; consulting physician to the German Protestant Home; aged 69; died, Dec. 4, 1938, of carcinomatosis.

Robert Allen Cavitt, Morrison, Okla.; St. Louis College of Physicians and Surgeons, 1896; member of the Oklahoma State Medical Association; county health officer; formerly member of the state legislature; aged 67; died, Dec. 24, 1938, in a hospital at Pawnee.

Emery Trekell, Wellington, Kan.; Northwestern University Medical School, Chicago, 1910; member of the Kansas Medical Society; county health officer; aged 61; died, Dec. 8, 1938, in the Hatcher Hospital of peptic ulcer, cerebral hemorrhage and uremia.

Frederick Snow Canedy, Wellfleet, Mass.; Boston University School of Medicine, 1891; member of the Massachusetts Medical Society; formerly member of the school committee; aged 70; died, Dec. 12, 1938, of cerebral arteriosclerosis and uremia.

Alpha John Wedel, Hesston, Kan.; University Medical College of Kansas City, Mo., 1910; member of the Kansas Medical Society; aged 56; died, Dec. 25, 1938, in the Bethel Deaconess Hospital, Newton, of lobar pneumonia and cerebral hemorrhage.

William Amos Trivette ⊕ Hamptonville, N. C.; Medical College of Virginia, Richmond, 1916; served during the World War; medical director and superintendent of the Trivette Clinic; aged 50; died, Dec. 20, 1938, of lobar pneumonia and influenza.

Clarence Banjay Wasson, Bellevue, Mich.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1901; member of the Michigan State Medical Society; also a minister; aged 73; died, Dec. 6, 1938, of senility.

George Edwin Lewis, Rockville, Md.; Southern Homeopathic Medical College, Baltimore, 1901; veteran of the Spanish-American and World wars; aged 69; died, Dec. 30, 1938, of arteriosclerosis, hypertension and myocarditis.

John Boyd McKeown, Great Falls, S. C.; Medical College of the State of South Carolina, Charleston, 1909; member of the South Carolina Medical Association; aged 52; died, Dec. 23, 1938, of myocarditis and pulmonary infarction.

Calvin Grant Stookey, Mechanicsville, Iowa; Illinois Medical College, Chicago, 1895; member of the Iowa State Medical Society; aged 73; died, Dec. 12, 1938, in St. Luke's Hospital, Cedar Rapids, of hypostatic pneumonia.

George Seibert Lesher, Eastport, Idaho; University of Pennsylvania Department of Medicine, Philadelphia, 1890; acting assistant surgeon, U. S. Public Health Service; aged 76; died, Dec. 16, 1938, in Spokane, Wash.

Arthur Glenn Davis, Senath, Mo.; St. Louis University School of Medicine, 1928; member of the Missouri State Medical Association; aged 34; died, Nov. 25, 1938, in a hospital at Paragould, Ark., of gastric carcinoma.

Jasper William Coller, Wellsville, N. Y.; Long Island College Hospital, Brooklyn, 1880; past president of the Allegany County Medical Society; for many years health officer; aged 86; died, Dec. 29, 1938, of myocarditis.

William Emerson Tucker, Ipswich, Mass.; Long Island College Hospital, Brooklyn, 1870; formerly member of the school committee; aged 89; died, Dec. 3, 1938, of carcinoma of the stomach and arteriosclerosis.

Lucius Sherman Nichols ⊕ Geneva, Ala.; Medical College of Alabama, Mobile, 1897; secretary of the Geneva County Medical Society; formerly county health officer; aged 66; died, Dec. 20, 1938, of pneumonia.

Clarence Mansur Westerman, St. Louis; Barnes Medical College, St. Louis, 1906; served during the World War; aged 52; died, Nov. 23, 1938, in the Veterans Administration Facility, Jefferson Barracks, Mo.

William Eli Morris, Georgiana, Ala.; Medical College of Alabama, Mobile, 1897; member of the Medical Association of the State of Alabama; aged 70; died, Dec. 6, 1938, of uremia.

Phebe Russell Norris ⊕ Washington, D. C.; Columbian University Medical Department, Washington, D. C., 1891; aged 78; died, Dec. 11, 1938, of chronic arthritis and myocarditis.

James C. Harris, Oakfield, Ga.; Georgia College of Eclectic Medicine and Surgery, Atlanta, 1904; aged 56; died, Dec. 5, 1938, in the Phoebe Putney Memorial Hospital, Albany.

Harry Cordover ⊕ New York; University and Bellevue Hospital Medical College, New York, 1934; on the staff of the Morrisania City Hospital; aged 30; died, Nov. 29, 1938.

David Ulysses Surface, Grand Rapids, Minn.; Sioux City (Iowa) College of Medicine, 1896; aged 70; died, Dec. 2, 1938, of myocarditis, hypertension and arthritis.

Martha V. Thomas, South Bend, Ind.; Hahnemann Medical College and Hospital, Chicago, 1896; aged 83; died in December 1938 of heart disease and hypertension.

Joseph Eli Bird ⊕ New Albany, Ind.; Hospital College of Medicine, Louisville, Ky., 1897; on the staff of St. Edward's Hospital; aged 68; died, Dec. 8, 1938.

James Henry Thomason, Guntersville, Ala.; University of Tennessee Medical Department, Nashville, 1907; aged 56; died, Dec. 4, 1938, of heart disease.

John Edgar Tidwell, Andrews, N. C.; Chattanooga (Tenn.) Medical College, 1903; aged 72; died, Dec. 3, 1938, of cerebral hemorrhage and pernicious anemia.

Fred Harvey Bly, Red Bluff, Calif.; Northwestern University Medical School, Chicago, 1911; aged 72; died, Nov. 12, 1938, of endocarditis.

Calvin F. Moranville, Hemingford, Neb. (licensed in Nebraska in 1891); aged 88; died at Bayard in November 1938 of senility.

John Henry George Youell, Aylmer (West), Ont., Canada; University of Toronto Faculty of Medicine, 1892; died, Nov. 28, 1938.

Leslie Roy Aiken, Courtright, Ont., Canada; Western University Faculty of Medicine, London, 1913; aged 51; died, Nov. 16, 1938.

Rosaire Georges Matte, Quebec, Que., Canada; Laval University Faculty of Medicine, Quebec, 1884; aged 77; died Oct. 30, 1938.

Frank William Ramsey, Somerville, Mass. (licensed in Massachusetts in 1901); aged 61; died, Nov. 28, 1938, of heart disease.

George William Stiffler, Denver; Missouri Medical College, St. Louis, 1887; aged 80; died, Nov. 17, 1938, of heart disease.

Andrew Jackson Farley, Irondale, Ala.; Atlanta Medical College, 1890; aged 82; died, Nov. 24, 1938, of cerebral hemorrhage.

Eugene Manigault Baker Jr., Patterson, Ga.; Jefferson Medical College of Philadelphia, 1926; aged 38; died, Nov. 2, 1938.

Garrett White, Chapel Hill, Tenn.; University of Tennessee Medical Department, Nashville, 1889; aged 73; died, Nov. 29, 1938.

Samuel Jacob Morris, Mount Elgin, Ont., Canada; Western University Faculty of Medicine, London, 1900; died, Nov. 5, 1938.

James G. Merrison, Sarnia, Ont., Canada; Faculty of Medicine of Trinity College, Toronto, 1878; died, Nov. 24, 1938.

Herman F. Ratte, Los Angeles; Missouri Medical College, St. Louis, 1886; aged 74; died, Nov. 21, 1938, of myocarditis.

Melville Wright Staples, Pleasant Plains, Ill.; St. Louis Medical College, 1884; aged 88; died, Dec. 8, 1938, of uremia.

Martin G. Fox, Thurmont, Ind.; University of Medicine, Indianapolis, 1898; died, Dec. 1, 1938.

Bureau of Investigation

MISBRANDED "PATENT MEDICINES"

Abstracts of Notices of Judgment Issued by the Food and Drug Administration of the United States Department of Agriculture

[EDITORIAL NOTE.—The abstracts that follow are given in the briefest possible form: (1) the name of the product; (2) the name of the manufacturer, shipper or consigner; (3) the composition; (4) the type of nostrum; (5) the reason for the charge of misbranding and (6) the date of issuance of the Notice of Judgment—which is considerably later than the date of the seizure of the product and somewhat later than the conclusion of the case by the Food and Drug Administration.]

Anogen.—Anogen, Inc., New York. Composition: Essentially furfural. Fraudulently represented as a cure for delayed menstruation.—[*N. J. 27226; October 1937.*]

Bacon's Ferretone Tonic.—Max E. Bacon, trading as Ferretone Co., Wichita, Kan. Composition: Chiefly powdered iron, chalk, phosphates, plant extractives, strychnine and a phenolic compound. "System purifier" and tonic," etc. Fraudulent therapeutic claims.—[*N. J. 27135; August 1937.*]

Big-Chief Herbs.—Spors Co., Le Center, Minn. Composition: Essentially plant material including lavender flowers and oil of mustard. For headaches, sinus, catarrh, hay fever and asthma. Fraudulent therapeutic claims.—[*N. J. 27538; January 1938.*]

Cadum Ointment.—Omega Chemical Co., New York. Composition: Essentially zinc oxide (20.4 per cent), sulfur (4.6 per cent), salicylic acid and oil of cade, in a petrolatum and wax base. Proportions of zinc oxide and sulfur falsely stated on label. Fraudulently represented to cure skin diseases, hemorrhoids, etc.—[*N. J. 27364; December 1937.*]

Cal-O-San Stomach Tablets.—G. Brewerton, Fort Browning, Mont. Composition: In each tablet, bismuth subcarbonate (10½ grains), chalk (6 grains), baking soda (10½ grains), starch and peppermint oil. For stomach ulcers, etc. Fraudulent therapeutic claims.—[*N. J. 27142; August 1937.*]

Corley's (Dr.) Cor-Lax.—Buren L. Corley, trading as Dr. Corley's Products, San Francisco. Composition: Essentially plant material including senna and peppermint leaves, cascara bark and fennel seed. Fraudulently represented as a cure for excess acid, upset stomach, congested liver, cancer, tuberculosis, diabetes, kidney and heart trouble, etc.—[*N. J. 27267; October 1937.*]

Corley's (Dr.) Health Broth.—Buren L. Corley, trading as Dr. Corley's Products, San Francisco. Composition: Essentially plant material, including alfalfa leaf and stem, okra, tomato, red pepper, celery seed, onion, potato starch, plant tissue resembling Irish moss, starchy material, and small amounts of stem, leaf and root tissues lacking in diagnostic tissue elements. Fraudulently represented as a cure for mineral and vitamin deficiency diseases, such as stomach gas and ulcers, all digestive upsets, skin ailments, depleted blood, all forms of rheumatism, etc.—[*N. J. 27267; October 1937.*]

Davis (G. W.) Inflammatory Extirpator.—Charles L. Isherwood & Sons, Fall River, Mass. Composition: Essentially alcohol (69.2 per cent), red pepper, a gum, water, and volatile oils including turpentine and camphor. Fraudulently represented as a remedy for external and internal pain, coughs, asthma, croup, headache, urinary diseases, rheumatism, etc.—[*N. J. 27146; August 1937.*]

Dunlap's Antiseptic Liniment.—Morna Wright Medicine Co., and Dunlap Medicine Co., Memphis. Composition: Essentially alcohol (78 per cent), water, and small amounts of chloroform, extracts of plant drugs, ammonia, and volatile oils including sassafras and eucalyptol. For rheumatism, toothache, headache, diarrhea, colic, etc. Fraudulent therapeutic claims.—[*N. J. 27534; January 1938.*]

Elco-Rub.—Erie Laboratories, Cleveland. Composition: Essentially petrolatum, oils of eucalyptus, wintergreen and turpentine, with camphor, menthol and guaiacol. For sore throat, croup, whooping cough, rheumatism, catarrh, etc. Fraudulent therapeutic claims.—[*N. J. 27360; December 1937.*]

Essential Food Minerals.—H. C. Roberts Co., Sioux City, Iowa. Composition: "Essential Food Minerals" was chiefly milk sugar (97.1 per cent), with traces of potassium, sodium, calcium, magnesium, iron, manganese, copper and silicon compounds, chlorides, phosphates and sulfates; "Special Gland Food Essential Food Minerals" was chiefly milk sugar (95.6 per cent), with traces of sodium, potassium, calcium, magnesium, iron, manganese, copper and silicon compounds, chlorides, phosphates, sulfates and iodides; "Special Iodine Containing Essential Food Minerals" was chiefly milk sugar (98.2 per cent), with traces of sodium, potassium, calcium, magnesium, iron, manganese, copper and silicon compounds, chlorides, sulfates, phosphates and iodides. Fraudulently represented for "tonic" and "building-up" purposes and as remedies for numerous ailments.—[*N. J. 27258; October 1937.*]

Ferretone Eye Lotion.—Max E. Bacon, trading as Ferretone Co., Wichita, Kan. Composition: Boric acid, menthol and a yellow color. Fraudulently represented to cure all ordinary eye affections, excessive secretion of tears, fatigued vision, ulcerated eyelids, etc., and to prevent "serious and lamentable diseases and loss of sight."—[*N. J. 27135; August 1937.*]

Foot Pal.—Spors Co., Le Center, Minn. Composition: Essentially small amounts of sodium salicylate, glycerin and pine needle oil in water, colored with a green dye. Fraudulently represented as an antiseptic and a cure for blisters resulting from nail wounds.—[*N. J. 27538; January 1938.*]

Geba.—Vitamin Products Research Foundation, Inc., Chicago. Composition: Protein, starch, sugars and compounds of calcium and magnesium, phosphates and carbonates, with approximately 2 U. S. P. units of vitamin A per tablet. Adulterated because not up to the standard of vitamin A represented for it; misbranded because fraudulently indicated to promote health, a vigorous, robust mind and body, disease resistance, sexual impotence, etc., and to combat infections, prevent anemia and cure irritability, listlessness and beriberi.—[*N. J. 27353; December 1937.*]

Grandma's Medicinal Herbs.—Park Laboratory Co., Inc., San Antonio, Texas. Composition: Essentially senna and small amounts of couch grass, American saffron, caraway seed, anise seed, licorice root, sassafras bark, lavender flowers, bearberry leaves and cinnamon bark. Fraudulent therapeutic claims for its alleged "cleansing" properties.—[*N. J. 27236; October 1937.*]

Hain Vegetable Accessory Reducing Food.—Hain Pure Food Co., Los Angeles. Composition: An appreciable amount of seaweed material, plus some nondescript vegetable tissues. Fraudulently represented as a food for the underweight and overweight, and as supplying dietary minerals.—[*N. J. 27527; January 1938.*]

Harosma.—Erie Laboratories, Cleveland. Composition: Essentially phenacetin (2.5 grains), aspirin (2.7 grains) and caffeine (½ grain), in each capsule. Adulterated and misbranded because each capsule did not contain 4 grains of phenacetin, as labeled; misbranded, further, because fraudulently represented as a cure for rose fever, rhinitis, la grippe, weeping eyes, etc.—[*N. J. 27234; October 1937.*]

He-She Antiseptic Vaginal Suppositories.—Helm Co., Benton Harbor, Mich. Composition: Essentially coco butter and boric acid, with small amounts of salicylic acid and quinine. Fraudulently represented as a preventive of leucorrhea and a germicide, and as being prescribed by eminent physicians.—[*N. J. 27275; October 1937.*]

Hygem.—Bloomfield Laboratories, Bloomfield, N. J. Composition: Viable micro-organisms to the amount of not less than 7 million per tablespoonful; no acidophilus bacilli found, though the label described the stuff as "The Mineral Oil Emulsion With Acidophilus." This misrepresentation constituted misbranding, as did the statement "Contains no Drugs nor Cathartics." Other claims were declared fraudulent.—[*N. J. 27388; December 1937.*]

Ice-Mint.—United Sales and Mfg. Co., Binghamton, N. Y. Composition: Essentially water, borax, camphor and menthol, in an ointment base. For nervous headache, sore muscles, corns and calluses, burns, "piles," etc. Fraudulent therapeutic claims.—[*N. J. 27237; October 1937.*]

Kayan.—Allied Laboratories, New York. Composition: Essentially phenolphthalein (about 1.2 grains per teaspoonful), a gum, sugar and starch. Fraudulently represented as a remedy for constipation, intestinal fermentation, toxemia, autointoxication, etc.—[*N. J. 27139; August 1937.*]

Kelement.—Lee Kelpodine Co., Inc., New York. Composition: Tablets consisting simply of kelp. Fraudulently represented as containing medicinal agents which, used as a food accessory, would be beneficial in mineral-salt deficiencies, soft and decayed teeth, pyorrhea, anemia, goiter, nervousness, insomnia, diabetes, frigidity, sterility, etc.—[*N. J. 27127; August 1937.*]

Kelpodine.—Lee Kelpodine Co., Inc., New York. Composition: Tablets consisting simply of kelp. For anemia, goiter, rickets, obesity, asthma, arthritis, dyspepsia, sterility, etc. Fraudulent therapeutic claims.—[*N. J. 27129; August 1937.*]

Kopp's.—C. Robert Kopp, Inc., Hellam and York, Pa. Composition: Morphine sulfate (⅛ grain per fluidounce), flavoring oils including anise oil, with alcohol, sugar and water. Fraudulently represented as a safe and appropriate remedy for babies and infants, whereas it contained morphine, a poison.—[*N. J. 27264; October 1937.*]

Kroup Monia Cough Syrup.—W. D. Taylor & Co., Bessemer, Ala. Composition: Essentially sugar, water, ammonium chloride, glycerin, alcohol, chloroform (1.3 minims per fluidounce), menthol and extracts of plant materials including pine. Fraudulently represented as a safe and effective treatment for croup, whooping cough, etc.—[*N. J. 27384; December 1937.*]

Lawrence's Liniment.—Crain's Corner Drug Store, Longview, Texas. Composition: Essentially glycerin, carbolic acid, iodine, alcohol (2.8 per cent by volume) and chloroform (27 minims per fluidounce). Fraudulently represented as a cure for croup, soreness of lungs, etc.—[*N. J. 27371; December 1937.*]

Lifsey's Vim Herb.—A. P. Durham, Anderson, S. C. Composition: Plant extractives and one or more emodin-bearing drugs. For stomach, kidney, liver and blood disorders, etc. Fraudulent therapeutic claims.—[*N. J. 27149; August 1937.*]

Menard's French Croup Suet.—Menard & Watson, Macon, Ga. Composition: Essentially creosote and volatile oils including camphor, incorporated in a fat. Fraudulent therapeutic claims.—[*N. J. 27372; December 1937.*]

Mentho-Kerchief.—Rieser Co., Inc., Shamokin, Pa. Composition: Essentially tissue paper, impregnated with menthol and other perfumes. Fraudulently represented as a remedy for sinus trouble, hay fever, etc.—[*N. J. 27272; October 1937.*]

Miller's Antiseptic Oil.—Herb Products Medicine Co., and Herb Juice Medicine Co., Jackson, Tenn. Composition: Essentially kerosene, with small amounts of red pepper and volatile oils including those of turpentine, wintergreen and sassafras. Fraudulently represented to contain no injurious substances and to be a remedy for muscular rheumatism, burns, scalds, diarrhea, cramps, etc.—[*N. J. 27249; October 1937.*]

Minnehaha Indian Herbs.—Spors Co., Le Center, Minn. Composition: Essentially plant material including senna leaves, gentian root, bearberry, triticum, and unidentified plant substances. Fraudulently represented to cure constipation and its results, such as rheumatism, kidney trouble, stomach disorders, etc.—[*N. J. 27538; January 1938.*]

Munyon's Tona Spaf.—Munyon Remedy Co., Scranton, Pa., and Sunshine Co., New York. Composition: Essentially an iron and phosphorus compound, with a small amount of an arsenic compound, plus alcohol, water and flavoring material. Fraudulently labeled as a blood purifier and remedy for la grippe, anemia, insomnia, diabetes, etc.—[*N. J. 27256; October 1937.*]

Naco Nature's Aid.—Naco Co., Jackson, Miss. Composition: Essentially iron sulfate and water, with small amounts of aluminum, calcium, magnesium, manganese, sodium, potassium and phosphorus compounds. Not a germicide, as claimed. Fraudulently represented as a remedy for sores, burns, rheumatism, kidney pus, dysentery, etc.—[*N. J. 27143; August 1937.*]

Nash's Carbolic Salve.—Nash Bros. Drug Co., Jonesboro, Ark. Composition: Essentially petrolatum, with small amounts of carbolic acid, camphor, rosin and boric acid. For salt rheum, tetter, eczema, felons, etc. Not antiseptic, as represented. Fraudulent therapeutic claims.—[*N. J. 27535; January 1938.*]

Nash's Pain-Go.—Nash Bros. Drug Co., Jonesboro, Ark. Composition: Essentially kerosene, with small amounts of volatile oils such as turpentine and sassafras. Fraudulently represented as a "snake oil" and an "antiseptic."—[*N. J. 27535; January 1938.*]

Ourine Nasal Balm and Ourine Application for the Ears.—Aurine Co., Chicago. Composition: "Nasal Balm," essentially mineral oil with small amounts of menthol, wintergreen, and green color; "Ourine Application for the Ears," essentially glycerin, boric acid, extracts of plant drugs and volatile oils, including lavender. Fraudulently represented as remedies for nose and ear troubles.—[*N. J. 27400; December 1937.*]

Picot Compound Tablets.—Picot Laboratories, Inc., Wilmington, Del. Composition: Essentially sodium salicylate, sodium benzoate, potassium nitrate, magnesium carbonate, bearberry and oil of juniper. Fraudulently represented as a cure for rheumatism, an aid to stomach and kidneys, and a blood purifier.—[*N. J. 27375; December 1937.*]

Picot Grape Flavored Salt.—Picot Laboratories, Inc., Wilmington, Del. Composition: Essentially baking soda, cream of tartar and tartaric acid, with small amounts of sugar and saccharin. No grape-like taste or odor detected. Fraudulently represented as a remedy for rheumatism.—[*N. J. 27375; December 1937.*]

Ra-Ed-O Pile Suppositories.—Helm Co., Benton Harbor, Mich. Composition: Essentially coco butter, with small amounts of quinine, salicylates, iron compounds and sulfates. "For all forms of piles—bleeding, itching and protruding . . ." Fraudulent therapeutic claims.—[*N. J. 27275; October 1937.*]

Radiumized Health Pad.—Radiumized Applicator Co., Inc. (address not given). Composition: 53 millimicrograms of radium per gram of ore, or 1,695 millimicrograms of radium per pad. Fraudulently represented to insure health and to cure kidney or bladder trouble, constipation, high blood pressure, goiter, skin diseases, etc.—[*N. J. 27259; October 1937.*]

Radiumized Water Revitalizer.—Radiumized Applicator Co., Inc. (address not given). Composition: Radium emanation (radon) in the proportion of 165 millimicrocuries of radon per U. S. quart. Fraudulently represented to "revitalize," to prevent illness, and to be a remedy and cure for chronic ailments, such as rheumatism, arthritis and gout.—[*N. J. 27259; October 1937.*]

R-P 60 Bladder and Gland Remedy.—Helm Co., Benton Harbor, Mich. Composition: Essentially water and extracts of plant drugs (including a laxative), with a small amount of salicylate. Misbranded because fraudulently represented for disorders of the kidney, bladder, rectum and spinal cord, among other things.—[*N. J. 27275; October 1937.*]

Rozel Douche Powder.—Rozel Laboratories, Chicago. Composition: Boric acid, common salt, ammonium alum, and small amounts of carbolic acid and menthol. Fraudulently represented as a cure for inflammations, irritations, leucorrhea, "feminine hygiene," etc.—[*N. J. 27363; December 1937.*]

Rozel Effervescent Cones.—Rozel Laboratories, Chicago. Composition: Essentially tartaric acid, baking soda, talc, starch and a small amount of a chlorine-liberating compound. Not a germicide for vaginal use, as represented. Fraudulent therapeutic claims.—[*N. J. 27547; January 1938.*]

Rx 333.—Erie Laboratories, Cleveland. Composition: Essentially aspirin and sodium salicylate. For the pains of rheumatism, neuralgia, gout, arthritis, lumbago, etc. Fraudulent therapeutic claims.—[*N. J. 27374; December 1937.*]

Rx 333 for Females.—Foundation Laboratories, Inc., Chicago. Composition: Essentially water, alcohol (34 per cent) and small amounts of phosphates, magnesium compounds, protein and perfume. Fraudulently labeled as effective for many female disorders, including certain types of sterility.—[*N. J. 27385; December 1937.*]

Rx 444 for Males.—Foundation Laboratories, Inc., Chicago. Composition: Water, alcohol (40 per cent) and small amounts of phosphates, magnesium compounds, protein and perfume. Fraudulently represented as a remedy for prostate and bladder troubles, backache, rheumatism, impotence, etc.—[*N. J. 27385; December 1937.*]

Sasa Scalp and Skin Aid.—Sasa Distributors, Portland, Ore. Composition: Essentially water and alcohol, with small amounts of borax, arsenic, caramel and oil of cinnamon. For dandruff, falling hair, eczema, etc. Fraudulent therapeutic claims.—[*N. J. 27366; December 1937.*]

Scheidemann Remedy Tea.—Scheidemann Remedy Co., Inc., Milwaukee. Composition: Essentially ground wood, twigs and needles, with juniper berries. Fraudulently represented as a remedy for diabetes, kidney disorders, etc.—[*N. J. 27235; October 1937.*]

Six-ine Pills.—Kells Co., Inc., Newburgh, N. Y. Composition: Essentially an iron compound, quinine, strychnine, starch and chalk. Fraudulently represented as a remedy for nervous exhaustion and depression.—[*N. J. 27532; January 1938.*]

Stark's Headache Powders.—Stark's & Co., Midway, Ky., McKesson-Peter-Neat Co., Louisville, Ky., and Kells Co., Newburgh, N. Y. Composition: Essentially acetanilid (averaging 6.75 grains per powder), caffeine and baking soda. Fraudulent therapeutic claims.—[*N. J. 27354; December 1937.*]

Tabletas Marca Vida Para Los Ninos.—Mexican Medicine Co., Los Angeles. Composition: Essentially compounds of bismuth, calcium, sodium, potassium, carbonates, nitrates, starch, and extracts of plant drugs including emodin. Fraudulently represented as a cure for numerous disorders in infants.—[*N. J. 27134; August 1937.*]

Uriseptin.—Gardner Laboratories, Chicago. Composition: Methenamine, water, glycerin, and extracts of plant material including corn silk, with small amounts of alcohol and salts of sodium, potassium and lithium. Fraudulently represented as a cure for Bright's disease, cystitis, rheumatism, gout, pneumonia, gonorrhea, etc.—[*N. J. 27367; December 1937.*]

Vegetrates.—Health Foundation of California, Los Angeles. Composition: "B. F. 1," essentially vegetable substances including rice bran, cinnamon, cranberry, kelp and leafy vegetables, as well as senna leaves and rhubarb; "B. F. 1" (in tablet form), also contained lime; "Formula H. F. C. No. A-45" (for arthritis), "D-44" (for diabetes), "A-417" (for hay fever and asthma), and "H-410" (for high blood pressure) were reported to consist essentially of unidentified root, stem and leaf material. All were declared misbranded because fraudulently represented to be "health builders" and to cure various disorders.—[*N. J. 27263; October 1937.*]

Vi-Go-Ra Olive Oil Hair Tonic.—Vi-Go-Ra Co., Providence, R. I. Composition: Essentially alcohol (about 77 per cent by volume), castor oil, a sulfonated oil, water and a coloring material. Misbranded because not more than a trace of olive oil was present, if any, and quantity or proportion of alcohol present was not declared on the label; misbranded, further, because of fraudulent claims that it would stop itching scalp instantly, check falling hair, and relieve eczema.—[*N. J. 27399; December 1937.*]

Vita-Mil.—Vita-Mil Co., Charleston, W. Va. Composition: Essentially epsom salt (about 20 per cent) and extracts of plant drugs, including a laxative, with small amounts of sodium benzoate, sugars, saccharin, caramel, flavoring material and water. Adulterated because not a herbal compound, as represented, but a mixture consisting largely of a mineral drug, epsom salt. For stomach and liver troubles, etc. Fraudulent therapeutic claims.—[*N. J. 27380; December 1937.*]

Wah-Poo-Sah Kee-Kee-Kee.—MacDonald Medicine Co., Detroit. Composition: Essentially water and alcohol, with small quantities of plant drugs, including a laxative. Fraudulently represented as "activating the muscle of the bowels" and as containing "no drugs of any kind."—[*N. J. 27248; October 1937.*]

Wil-Du Rheumatism and Gout Medicine.—Wil-Du Medicine Co., Woodbury, N. J. Composition: Essentially alcohol (67 per cent by volume), water, and extracts of plant drugs including senna. Fraudulent therapeutic claims.—[*N. J. 27398; December 1937.*]

World's Wonder System Builder.—World's Wonder Medicine Co., Inc., Detroit. Composition: Essentially epsom salt, extracts of plant drugs including a laxative, with sugar and water. Misbranded because represented to contain chiefly horehound, prickly ash, red clover, red puccoon, black root and pokeroot. Fraudulently represented as a cure for indigestion, scrofula, skin and blood diseases, kidney trouble, chronic rheumatism, etc.—[*N. J. 27540; January 1938.*]

Zonalife.—Zonalife Distributors, St. Louis. Composition: Essentially epsom salt and water, with small amounts of iron and sodium compounds, salicylic acid, wintergreen and saccharin. Fraudulently represented as a cure for headaches, sluggish kidneys, rheumatism and high blood pressure.—[*N. J. 27245; October 1937.*]

Correspondence

THE STATUS OF RETICULOGEN

To the Editor:—The communication from Dr. William P. Murphy, which appeared on page 169 of the January 14 issue of THE JOURNAL, in which he discussed the value of reticulogen, calls for a reply and word of explanation from the U. S. P. Anti-Anemia Preparations Advisory Board.

According to Dr. Murphy, Eli Lilly & Co. has stated in certain advertising literature that "Reticulogen contains 20 units of anti-pernicious anemia principle per cc." Eli Lilly & Co. have not, however, submitted Reticulogen for consideration by the U. S. P. Anti-Anemia Preparations Advisory Board. Consequently the board has made no statement of the potency of this product in terms of U. S. P. units. Moreover, on page 629 of the August 1938 issue of the *Journal of the American Pharmaceutical Association* the board stated that "it will not for the present assign to any preparations of injectable liver extract a strength greater than fifteen units per cubic centimeter." Finally, the U. S. P. advisory board has not published any standards for hemopoietic responses to which Eli Lilly & Co. could refer. Indeed, data concerning hemopoietic responses are only a part of the information which is considered by the board in the assignment of unitage to satisfactory products. Thus it should be entirely clear that the claim of Eli Lilly & Co. does not refer to U. S. P. units but can relate only to units of an entirely unofficial character.

The U. S. P. advisory board is the only agency for assigning U. S. P. units to liver and stomach preparations. Therefore, if any manufacturer labels a product in terms of units other than U. S. P. units, they are units devised merely by that manufacturing house and must not be identified with U. S. P. units. It is most regrettable that the use of such unofficial units should exist and thus lead to confusion. If one manufacturer determines his own units, so may all, and thus the work of the advisory board in securing uniformity of labeling would go for naught.

The board, therefore, took the matter up with the manufacturers of Reticulogen, pointing out the difficult situation which had arisen, and asked them whether they would not change their labels and advertising literature by withdrawing the term "unit" and in this way help to clarify the situation. It is pleasant to report that Mr. Eli Lilly, president of Eli Lilly & Co., has informed the board that in the future on its labels and in its advertising literature it will describe the potency of its product in another way than by the term "unit."

A final word of explanation concerning the definition of a U. S. P. unit should be made. It will be recalled that the first publication of this board, made Feb. 14, 1938, defined the term "U. S. P. unit" as "that amount of material which, when given daily to patients with pernicious anemia, has produced a satisfactory hematopoietic response." It is perhaps desirable to point out that such a definition of a U. S. P. unit does not imply that it represents the minimal amount of effective material which might result in a satisfactory response but merely that particular amount of material which has in fact produced such a response.

Thus if a manufacturer submits at a later time data indicating that a smaller amount of material than that originally tested will give a response satisfactory to the board, a greater unitage for a given amount of the same preparation will be officially assigned. It should therefore be understood that U. S. P. units are not necessarily interchangeable from one product to another. Nevertheless, from the point of view of the patient and the physician it is of far greater practical importance that the official U. S. P. unit should indicate that amount of material which will assuredly possess the potency just defined.

UNITED STATES PHARMACOPEIAL ANTI-ANEMIA
PREPARATIONS ADVISORY BOARD.
By C. W. EDMUNDS, Chairman.

MAGNESIUM SULFATE IN PAROXYSMAL TACHYCARDIA

To the Editor:—In THE JOURNAL, Dec. 17, 1938, page 2275, is a discussion by William Dressler on the use of magnesium sulfate in paroxysmal tachycardia. In *Klinische Wochenschrift* (**14**:1429 [Oct. 5] 1935) was reprinted my research: Ueber die Magnesiumwirkung auf das Herz (The Influence of Magnesium Sulfate on the Heart). This paper was abstracted in THE JOURNAL, Nov. 23, 1935, page 1727. I was the first to report the use of magnesium sulfate in paroxysmal tachycardias and ventricular fibrillation. About the same time was published an experimental study on the effect of magnesium on tachycardia produced by barium and strophanthin (Rothberger, C. J., and Zwillinger, L.: Ueber die Wirkung von Magnesium auf die Strophantin- und die Barium-tachycardie, *Ach. f. exper. Path. u. Pharmakol.* **181**:301, 1936). Dr. Dressler learned this use of magnesium sulfate from me in Vienna. Therefore I was astonished to read that he did not name me as the author of this work.

L. ZWILLINGER, M.D., Prostějov, Czechoslovakia.

CERTIFICATION OF STAINING SOLUTIONS

To the Editor:—In a recent note in THE JOURNAL (Sept. 24, 1938, p. 1239), attention was called to the work that is being done by the Commission on Standardization of Biological Stains, and the question was raised as to whether it would not be possible for this organization to be of more assistance to physicians if its duties were broadened so as to include the approval of satisfactory staining solutions as well as stains in the solid form. In this earlier note the difficulties of doing this were discussed, and the article ended with a query as to who are the chief purchasers of stains in solution form and as to which particular staining solutions give the most trouble at present.

Considerable comment concerning this article has been received, and it is felt that, to a certain extent, the questions asked have been answered. It has been concluded from the comments received that physicians are, as was suspected, the chief purchasers of staining solutions. It also appears that the biggest demand is for the blood stains and that solutions of this type apparently give the most trouble if purchased from an unreliable source. The physician or technician who has to make a blood stain himself but is not equipped to make up the necessary solution or for some other reason finds it inconvenient to do so usually cannot take time to write to some supply house in a distant city in order to obtain the solution already prepared. There is no question but that it would be of assistance to such a physician if some local dispensary of known reliability was available to him from which he could purchase the staining solution he needed.

Since publication of the previous article, the commission has had its attention called to a group of technicians here, a private laboratory there and some individual somewhere else who are disinterestedly trying to supply local physicians in a semi-commercial way with reliable staining solutions. It is felt that there must be other organizations, such as clinical laboratories, or persons endeavoring to do the same sort of thing in other places. Undoubtedly the Stain Commission could be of assistance to any one who is sincerely trying to do this. It could help by seeing that the best ingredients, proper formulas and approved methods of preparation are employed, by arranging to test the products without prohibitive expense to those who prepare the solutions and finally by adopting some plan to assure the purchaser of the reliability of the stains thus prepared.

This note is published in the hope that any persons or organizations who are trying to supply superior staining solutions to physicians and who would welcome the cooperation

of the Stain Commission will get in touch with the chairman at the address given. It is felt that some practical plan can be worked out; but before putting any such plan into operation, we must have a little clearer idea than at present how widespread will be the cooperation we can have in the project. Physicians reading this article can be of assistance in calling it to the attention of some one in their locality who they think might be fitted to cooperate with them and with us in such an undertaking.

H. J. CONN, PH.D., Geneva, N. Y.
Chairman, Biological Stain Commission.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

CRITERIA OF CURE IN NEUROSYPHILIS

To the Editor:—What tests and observations are of the greatest importance in the examination of the spinal fluid to determine whether a cure of syphilis has been effected? What tests in a neurologic examination are most important in determining whether a patient has been cured?

M.D., Kentucky.

ANSWER.—This question cannot be answered without a brief discussion of the criteria of "cure" in syphilis. The word "cure" may be applied in three different senses: (*a*) biologic, (*b*) serologic and (*c*) symptomatic. Biologic cure implies that the last remaining spirochete has been eradicated from the patient's body, that he is rendered susceptible to reinfection with syphilis and usually that he is simultaneously "cured" from serologic and symptomatic standpoints. So far as is now known, biologic "cure" is attainable only when treatment is begun in the early stages of syphilitic infection, probably within the first six months. It cannot, so far as is known, be accomplished in patients with late syphilis.

Serologic "cure" implies that all serologic reactions of the blood and spinal fluid are rendered negative and remain so. This type of "cure" is not necessarily synonymous with biologic cure, since serologic "cure" is attainable in some instances of late as well as of early syphilis; nor is it synonymous with symptomatic "cure," since clinical progression or relapse may take place in the face of persistently negative serologic reactions.

Symptomatic "cure" implies that the patient is relieved of symptoms or lesions caused by syphilis, that he is restored to normal health, is maintained in normal health for the duration of his lifetime and is rendered noninfectious for others. Symptomatic "cure" is synonymous with neither biologic nor serologic "cure," since symptomatic "cure" may be attained both in early and in late syphilis without complete eradication of the infection and with positive serologic reactions of the blood or spinal fluid, or both, persisting. For example, symptomatic "cure" is even attainable in dementia paralytica, though in such patients both foci of organisms, positive serologic reactions of the blood and spinal fluid and neurologic abnormalities may persist.

Strictly speaking, therefore, neither the examination of the spinal fluid nor a neurologic examination can be used as a definite criterion of "cure" of syphilis, either biologic, serologic or symptomatic. It is, however, true that in early syphilis examination of the spinal fluid should be employed as a routine as (*a*) a determinant of the type and amount of desirable treatment and (*b*) a criterion for the complete cessation of treatment. For the former purpose, examination of the spinal fluid should be performed as a routine at about the sixth month after the institution of treatment. If at this time the spinal fluid is normal, treatment may proceed by standardized routine methods. If, on the other hand, the spinal fluid is abnormal, alterations in the treatment system are frequently necessary to provide for the contingency of asymptomatic neurosyphilis. For the latter purpose, i. e. as a determinant of "cure," examination of the spinal fluid should be repeated in all patients with early syphilis at the end of a post-treatment year of probation and regardless of whether the original spinal fluid was normal or abnormal. If at the time of this last examination of the spinal fluid abnormalities are found, treatment should be resumed.

In late syphilis, i. e. of more than two years' duration, and whether or not the patient has symptoms or physical signs pointing to involvement of the nervous system, the spinal fluid should be examined before any treatment is given or as early as possible in its course. If the original examination of the spinal fluid of a patient with late syphilis is negative it need not be repeated, since in persons in whom immunity has been established a normal spinal fluid is a practical guaranty against the subsequent development of syphilis of the central nervous system. If, however, in late syphilis the spinal fluid is abnormal at the original examination, reexamination of the fluid during and after treatment is essential in order to estimate the effectiveness of treatment, to provide for alterations in its type if necessary and to gage the optimal amount of treatment desirable.

The tests obligatory in the examination of spinal fluid at any stage of syphilitic infection are (*a*) cell count, which must be performed within one hour after the fluid has been withdrawn, (*b*) protein estimation, preferably by a quantitative technic, (*c*) Wassermann test on graduated amounts of fluid ranging from 0.1 to 1 cc. (flocculation tests on spinal fluid are less satisfactory than complement fixation tests) and (*d*) a colloidal gold, mastic or benzoin test.

Like examination of the spinal fluid, results of a neurologic examination, whether negative or positive, can be used as a criterion of "cure" in syphilis only in the light of the discussion of "cure" briefly given. In patients with early syphilis it may be taken for granted that at the start of treatment neurologic abnormalities are absent (excepting the rare instance of acute syphilitic meningitis or the contraction of syphilitic infection by a patient with some other neurologic disease). If the patient with early syphilis is normal from the neurologic standpoint, he should remain so not only during the period of treatment and the post-treatment year of observation but also during yearly periodic recheck examinations for the duration of his life.

In patients with late syphilis, however, and even in those who have neurologic abnormalities present at the start of treatment, symptomatic cure may often be attained. In this case the important feature of recheck examinations from the neurologic standpoint is not the disappearance of abnormalities which were originally present but instead the absence of progression in these abnormalities or the nondevelopment of fresh ones.

It is impossible in the brief confines of such a reply as this to outline the steps of complete neurologic examination. Assuming the absence of gross neurologic abnormalities, however, the most important features of recheck examination of treated syphilitic patients are the state of the pupillary reactions both to light and in accommodation; examination of the optic fundus as to the appearance of the optic disks and also a test of visual acuity and at least gross tests of the visual fields; the presence or absence of conduction deafness; tests of the deep and superficial reflexes, especially knee and ankle jerks; tests of deep pain sense by squeezing the achilles tendon and the gonads; tests for vibratory sense in the lower extremities, particularly over the malleoli and tibias; tests for ataxia, including not only such gross tests as the Romberg, the knee-heel, the finger-nose and the finger-finger, but also more delicate tests such as position sense in the great toes, and sensory examination for abnormalities of light touch and pain, particularly in zonelike distribution over the thorax or in patchy distribution over the fronts of the shins.

DIAPER RASH

To the Editor:—Would you please outline a proper course of dietary and local management for a severe case of ammoniacal dermatitis.

M.D., Wisconsin.

ANSWER.—Ammoniacal dermatitis is an erythematous dermatitis occurring in the napkin area of infants. It is an intertrigo caused by friction of the diaper or by uncleanliness. Ammonia is formed in the wet diaper in situ by the growth of a saprophytic bacillus which splits the urinary urea into ammonia. This bacillus, according to Cooke (The Etiology and Treatment of Ammonia Dermatitis of the Gluteal Region of Infants, *Am. J. Dis. Child.* **22**:480 [Nov.] 1921), is derived from the intestinal contents and infests the diaper as a result of soiling by feces. The best treatment is prophylactic. The diaper should be washed with scrupulous cleanliness, rinsed thoroughly several times in clear water and then put through a final rinsing of boric acid solution. The use of soap and water on the affected parts should be avoided and the skin cleansed with olive oil or liquid petrolatum. A soothing lotion such as zinc oxide 12 Gm., talcum 8 Gm., glycerin 6 cc., sodium borate 6 Gm. and solution of calcium hydroxide to make 240 cc. may be used, or the following ointment: purified tar 3 Gm., zinc oxide 8 Gm., starch 8 Gm. and simple ointment to make 30 Gm.

DOG BITES AND RABIES

To the Editor:—In connection with the prevention of human rabies, would you kindly discuss the following questions: Is it a fact that the patient's skin wound must be of subcutaneous depth before the Pasteur treatment is indicated (assuming that cauterization has previously been performed)? If no bite has been incurred but the skin has been in contact with the saliva of a rabid animal, is treatment indicated? Do the presence of small superficial breaks in the skin, such as scratches, partially healed cuts and pimples indicate treatment if the patient has had contact with a rabid animal? JOHN M. COLLINS, M.D., Seattle.

ANSWER.—There are many thoughtful persons who deplore the cauterization treatment of dog bites or any other open wounds. They believe that such methods are only a repetition of the hot oil treatment of wounds, which was considered proper treatment in the days of Ambroise Paré but which thinking persons have abandoned just as did Paré.

Some believe that if the patient is seen immediately after a wound or bite has been sustained the most effective method of treatment is careful, patient and prolonged cleansing of the wound with soap and water and subsequent irrigation of the wound with warm salt solution. The depth of the wound would have no influence in modifying this treatment except that an irregular wound should be opened or enlarged sufficiently to make sure that every portion of it is reached by the soap and water and salt solution. When the wound resulting from a bite is treated immediately and carefully in this fashion the administration of antirabies serum is not advocated in all instances. On the other hand, if the wound is not seen promptly after the injury has been sustained and so there has been opportunity for the virus to enter the deeper tissues, it should still be cleansed as carefully and thoroughly as possible and this cleansing should be followed with the Pasteur treatment.

ISOLATION OF TUBERCULOUS PATIENTS IN GENERAL HOSPITALS

To the Editor:—The county medical society requested a tuberculosis survey. This survey was recently published and under Institutional Care is found the statement: "The county needs additional beds for the tuberculous. The attitude of the local hospitals is commendable in admitting and caring for the tuberculous for limited periods of time, but the necessary prolonged period of bed rest is not possible and thus far *in these hospitals the isolation of the tuberculous has not been accomplished.*" The last clause has caused considerable discussion, so I am coming to you for an answer to the following question: What precautionary measures should be employed when tuberculous patients are confined to a general ward in a hospital? EXECUTIVE SECRETARY, COUNTY SOCIETY.

ANSWER.—There is excellent support for opening a general hospital to tuberculous patients. As early as 1895 Dr. Lawrence Flick of Philadelphia made a provision for such use of general hospitals. In 1908 the International Congress on Tuberculosis urged general hospitals to provide beds for the tuberculous. In 1912 and 1924 the National Tuberculosis Association adopted resolutions in favor of using general hospitals for tuberculous patients. In 1920 and 1921 the American Medical Association and the American Hospital Association adopted such resolutions. Probably the most recent action on this subject was by the National Tuberculosis Association and the American Hospital Association. In June 1938 a committee of the National Tuberculosis Association with Dr. Charles Hatfield of Philadelphia as chairman made a report strongly recommending the use of general hospitals for the tuberculous. The manuscript for a bulletin on this subject has recently been prepared by Dr. W. H. Oatway of the University of Wisconsin for the American Hospital Association. This is the most complete presentation of the subject that has been made to date. It not only gives the reasons for the use of general hospitals for the tuberculous but also presents a procedure which should be carried out in every hospital that admits tuberculous patients.

Already a good many general hospitals in this country have established tuberculosis services. In fact in 1935 the American Medical Association presented the report of an extensive survey which showed that 418 hospitals in the United States have tuberculosis services and that in a single year approximately 37,000 patients were admitted to them.

The modern treatment of tuberculosis is such that removing patients to isolated places is no longer necessary. Any general hospital that is adequately equipped or can be so equipped is satisfactory for the treatment of this disease, provided nurses and physicians well informed and qualified in the treatment of this disease are in charge. In other words, a division of the hospital can be operated with the same effectiveness in the treatment of tuberculosis as a sanatorium.

The contagiousness of tuberculosis was clearly recognized and discussed nearly 2,500 years ago. The experimental work of Villemin, Cohnheim, Koch and the epidemiologic studies of Budd and others proved beyond doubt that tuberculosis is contagious. This fact probably accounts for the statement in the report of the survey in question to the effect that the isolation of the tuberculous has not been accomplished. Recently careful observations have proved beyond doubt that tuberculous patients in hospitals and sanatoriums transmit tubercle bacilli to members of the personnel. Moreover, there is no reason to doubt that they transmit bacilli to other patients. In seeking appropriations for the building of sanatoriums in this country, one of the main arguments was and still is that the tuberculous patient who has the disease in the contagious stage should be removed from his home in order to prevent the spread of tubercle bacilli to the members of his family and other associates. It is ridiculous to consider that a disease which is contagious while the patient remains in the home is not equally contagious when the patient is transferred to a hospital.

The control of tuberculosis in many parts of the world has been so effectively conducted that at present more first infections occur in adult life than in the earlier years of life. For example, Heimbeck of Oslo found that approximately 50 per cent of the students of nursing reacted to the tuberculin test on entrance but that on graduation, after having taken a tuberculosis service, 100 per cent reacted to the test. In this country Geer found that 30 per cent of the entering students under his observation reacted to tuberculin, while 100 per cent of the same group reacted on graduation. These students were subjected to exposure to tuberculosis in a special service for this disease in a general hospital. Boynton found that the rate of tuberculosis infection is a hundred times greater among student nurses in a general hospital service than among students in a college of education and 500 times greater among student nurses in a special tuberculosis service than among students in a college of education. Moreover, when students of nursing and medicine become infected with tubercle bacilli, in a considerable number pulmonary lesions develop demonstrable by x-ray examination; in some clinical tuberculosis, such as pleurisy with effusion, develops, and a few die soon of acute forms of the disease, such as pneumonia, meningitis and miliary tuberculosis. Ross of Manitoba has reported 135 students or graduates in nursing who have been treated in his institution. He says: "Scores of students of nursing lose health and life through hospital-contracted tuberculous infections. Practically all students become tuberculin-positive during their course, showing that they have become infected even if disease should not follow. The hospital cannot avoid responsibility for the infection of nurses until the utmost of medical and nursing science has been used to prevent it."

In Saskatchewan Ferguson found that twelve times as many students or recent graduates in nursing fall ill with tuberculosis as other persons in the general population and eight times as many as among normal school students of about the same age as the nurses.

Heimbeck of Oslo has reported the highest percentage of student nurses falling ill with tuberculosis during training in a general hospital with a tuberculosis service.

Myers, Diehl, Boynton and others have recently called attention to the fact that in 9.6 per cent of medical students who took a tuberculosis service and became infected, so as to react to the tuberculin test, lesions developed in the lungs which could be demonstrated by x-ray films or which caused illness during the brief period of their observations. Among students of nursing who took a tuberculosis service and became reactors to tuberculin, such lesions developed in approximately 11 per cent. In addition to those in whom demonstrable lesions developed within a few months or a few years, all others who became infected have primary tuberculous complexes in their bodies and therefore are potential tuberculosis patients.

With this evidence and much more that might be cited, the time has arrived when one can no longer afford to treat tuberculous patients in general hospitals without making adequate provision for the protection of the personnel. In addition to the responsibility that every hospital should assume for the health of its personnel, there is a legal aspect which is looming large in this country and has become a serious reality. In several states tuberculosis has been placed on the occupational disease list and in others such action is being contemplated. Awards have been drawn by industrial commissions for a good many members of hospital personnel during the past few years.

In the earlier resolutions adopted by various organizations with reference to general hospitals admitting tuberculous patients, the danger to the personnel was minimized or ignored. How-

ever, the recent evidence of the spread of tuberculosis to members of hospital personnel has been so overwhelming that a definite account was taken of the dangers in the 1938 report of the Committee of the National Tuberculosis Association and the recent *Bulletin of the American Hospital Association.*

BACKACHE, MERALGIA PARAESTHETICA AND POSSIBLE SYMPATHETIC NERVOUS SYSTEM TRAUMA

To the Editor:—A married white woman aged 27 first experienced an attack of low back pain, acute and cramping in nature with radiation down the right thigh, at 19. She attributes the attack to lifting. It subsided in a few days with bed rest and local heat. The only previous trauma she can recall was a fall from a tree at the age of 14, the fall not being followed by disability. At the time of the first attack two orthopedists recommended spine fusion for tropism of the articular facets of the fifth lumbar vertebra. The operation was not performed. Following this attack and for the next six years she experienced similar attacks recurring at intervals of roughly three months. Precipitating factors were unusual strain as in lifting, golf or tennis, although at other times she could perform these acts with impunity. The duration of the attacks varied from a few days to two weeks, usually responding to time, bed rest and local heat. When conservative measures failed she submitted to osteopathic maneuvers, which seemed to give relief. She found it advisable to sleep with a 1 inch plank under the mattress. The last attack began in January 1937. While sitting in a theater her back suddenly began to hurt and on attempting to arise she found that pain prevented her from straightening. The low back area seemed cramped into a knot and all trunk and thigh movements were painful. At this time there was no sciatic radiation. Passive flexion of the thighs and pelvic rocking resulted in pain in the low back area and this area was tender to deep pressure. Her most comfortable position was lying with the legs flexed on the thighs and the thighs flexed on the trunk. Conservative measures were tried for four weeks but were unsuccessful and the patient was then hospitalized. Physical and neurologic examinations were negative except as noted and absent ankle jerks. Gynecologic examination was negative. The blood count was normal, urinalysis negative, blood Wassermann reaction negative, blood sugar 95 mg. per hundred cubic centimeters, nonprotein nitrogen 25 and cholesterol 150. Spinal fluid pressure was 70 mm. of water, protein not elevated, gold curve flat, cells 5, Wassermann reaction negative. Reversed Queckenstedt showed that no block was present. X-ray examination showed faulty articulation of the articular facets of the fifth lumbar vertebra with the sacrum. The low back pain subsided after two days on a Bradford frame although straight leg raising still caused pain in the low back area. A modified Albee spine fusion was then done, the graft being taken from the left iliac crest, splintered and laid in the bed. The wounds healed by first intention. During the postoperative period she did not complain of pain in the operative site as much as pain in the anterolateral aspect of the right thigh in an area about 2 inches below Poupart's ligament nearly to the knee. This pain was burning, sticking, tearing and digging in nature. It was quite constant although worse at night. On neurologic examination this painful area was found to correspond to the distribution of the lateral femoral cutaneous nerve. The area was hyperesthetic and firm touch was painful. The patient described it as the kind of pain produced by pressing on a carbuncle. Even light pressure, as from clothes, could not be tolerated long. Paresthesias were present in this area. Outside this area there were no neurologic changes except for the absence of ankle jerks bilaterally. Muscle tone and strength were equal and normal. A diagnosis of meralgia paraesthetica was made and in September 1937, the right lateral femoral cutaneous nerve was interrupted at its exit from the fascia, a piece excised and the proximal stump injected with absolute alcohol. For the next four days there was nearly complete relief except for occasional shooting pains similar to those experienced before the operation. Histologically the excised nerve showed "degenerative changes." Five days after the operation the entire picture recurred with pain as constant and severe as before. Two subsequent operations were performed peripherally. In October 1937 the nerve was interrupted in the right iliac fossa with no effect on the pain. In January 1938 the stump of nerve left at the first operation was found tightly bound down as it passed through Poupart's ligament. The end was bulbous. It was freed and cut back as far as possible with no effect on the pain. I might add that the first and third nerve operations were done only after procaine blocking had shown that they should be successful. During this entire period the patient had been experiencing constant pain in the low back area and stereoscopic roentgenograms showed that fusion was not complete. In March 1938 studies with iodized oil showed no block. Alcohol injections into the lumbar dorsal roots were attempted but the nerves could not be reached because of the presence of the fusion. Epidural injections gave no relief. In May 1938 typhoid vaccine fever therapy resulted in exacerbation of the pain. The patient was taking 3 grains (0.2 Gm.) of codeine and 2 grains (0.13 Gm.) of morphine daily without marked effect. She was going downhill physically. In July 1938 spinal anesthesia stopped the pain for its duration. Laminectomy over the lumbar roots was performed and the nerves were found to be normal except for a few arachnoidal adhesions, which were cleared. The patient experienced moderate relief for about one week. In August 1938 a high thoracic chordotomy was performed. Since then the patient has had no pain in the right thigh or the low back area. About one week after the operation, however, she began to experience constant burning pain in the palm of the right hand. The pain was digging, tearing and crushing in nature. Exposure to cold air made the hand cyanotic; exposure to warm air caused it to become red and swollen. All movements are painful, although they could be performed. The area is hyperesthetic. The only relief that can be obtained is by immersion in cool, not cold water. The skin is macerated. There is no vesiculation or ulceration and the nails appear normal. The dorsum of the hand is not affected. Application of a tourniquet to obstruct the venous return increases the pain. Obstruction of the arterial supply does not increase the pain but it does not relieve it. The patient readily agreed that she could not continue to take narcotics and although she experienced the usual withdrawal symptoms she stopped immediately without having to taper off. Barbiturates at night are her sole medication. Thiamin chloride, 3,000 units daily, is being given. Incidentally there are no neuropsychiatric determinants in this case and a psychiatric diagnosis is untenable. If this is causalgia could it have been caused by traumatism to the nerve roots at the time of the chordotomy? From the literature I have the impression that this condition is produced only by lesions more peripherally. If the damage is to the nerve roots would alcohol injections into these dorsal roots be more rational than stellectomy? Is stellectomy or destruction of the stellate ganglion by alcohol always followed by a Horner's syndrome and if this syndrome intervenes is there any possibility of its being severe enough to impair vision? What would be the order of investigation and procedure which would be least likely to injure or mutilate this patient without unduly prolonging her pain? Is periarterial sympathectomy as described by Leriche still being used? If this is not causalgia would you give the differential diagnosis and outline of therapy? M.D., New York.

ANSWER.—The detailed history, with extensive and apparently accurate clinical and laboratory studies, leaves little that can be recommended from the standpoint of further examination.

The initial complaint of low back pain with sciatic nerve radiation following a strain from lifting, and with subsequent attacks which were often precipitated by lifting, golf or tennis, could best be explained on a mechanical basis, such as retropulsion of an intervertebral disk, without actual rupture of the posterior fibers of the annulus fibrosus. Symptoms may be relieved under these circumstances when the muscle spasm resulting from impingement of the bulging disk on a nerve root is relieved, permitting the fibrocartilaginous disk to reassume its normal contour. It now seems probable that in a considerable proportion of the cases in which there is intermittent backache with sciatic pain the pathologic condition is that which has been described. The presence of a few arachnoidal adhesions about the lumbar nerve roots may be explained as secondary to this intermittent mechanical irritation.

It is more difficult to explain the subsequent symptoms and signs of lateral femoral cutaneous nerve irritation and the painful manifestations in the right upper extremity. The onset of the so-called meralgia paraesthetica within a few days after an operation which was predicated to cure the low back pain and the occurrence of acute pain and vasomotor phenomena in the right hand following the thoracic chordotomy, which apparently resulted in relief of pain in the areas of which the patient had previously complained, does definitely suggest neuropsychiatric factors in spite of the fact that they are so definitely denied. Addiction to morphine must be considered as a possible motive for influencing the mind in the development of a series of painful symptoms which might entitle the patient to receive a drug which her system may have demanded. The possibility that she may be obtaining morphine although it is no longer administered to her by those in attendance cannot be ignored without exhaustive attempts to determine this fact.

If there has been no mistake in interpreting the symptoms and signs which have been supplied, the painful phenomena of the right hand can be explained as a result of traumatism to the sympathetic nervous system. The symptoms described may be those of an atypical erythromelalgia or Raynaud's disease. Attacks of similar painful phenomena have been observed following surgical sections of sympathetic nerve trunks and have been attributed to the development of small neuromas at the cut end of the sympathetic nerve fibers. The chordotomy must have involved some of the tracts of the sympathetic nervous system in the upper thoracic spinal cord, and contraction of scar tissue about sympathetic nerve fibers may be responsible for the symptoms.

Any treatment which can be recommended would be largely hypothetic. Excision of the stellate ganglion has frequently resulted in relief from symptoms such as those described. Accurate selection and removal of this ganglion is followed by the development of some degree of enophthalmos, narrowing of the palpebral fissure and contraction of the pupil of the eye on the operated side. This Horner's syndrome is not sufficient contraindication to the operation if removal of the ganglion offers a reasonable prognosis for symptomatic relief. If the patient is willing to permit the isolation of the stellate ganglion with local anesthesia, a therapeutic test should be carried out before undertaking its excision. After the ganglion has been injected with procaine hydrochloride, the hand may be exposed to cold air or water and subsequently to heat to determine whether or not the procaine block has prevented the recurrence of pain and of the vasomotor phenomena. In the event that such an injection does relieve these symptoms, it would appear logical to proceed to remove the ganglion. Periarterial sympathectomy as described by Leriche has for the most part been discontinued as a therapeutic measure.

CHILDBIRTH AFTER THIRTY—INFANTILE UTERUS—FEAR OF PREGNANCY

To the Editor:—1. What is the present tendency in scientific thought relative to the prognosis of pregnancy in a physically healthy woman after the age of 30 years? I have felt that such a woman with normal measurements and satisfactory obstetric care would have only slightly if any less chance of giving birth to a normal, healthy child than a woman younger. There seems to be a tendency, however, to discourage pregnancy after the age of 30 or 35 unless the conditions are absolutely ideal. Some of the childless marriages appear to be explained adequately in the minds of laymen by the diagnosis of "sterility" without tangible evidence of the condition. 2. Would a physician's diagnosis of "infantile uterus" without other evidence of pelvic disorder be a possible indication for endocrine therapy? 3. Should a woman who appears to have no other contraindication to pregnancy in her thirties except for fear of labor be allowed to adopt a child? Would it not be better to give endocrine treatment where indicated as well as help for unsatisfactory attitudes with the hope that such a woman can have her own child? On the other hand, should a woman who has such a fear of pregnancy and who is so far removed from satisfactory obstetric care that her condition in labor might be hazardous be allowed to rationalize her supposed biologic deficiency?

M.D., Nebraska.

ANSWER.—1. A physically healthy woman, after the age of 30 years, if her husband is potent, can have as many babies as she desires and her chances of giving birth to normal healthy offspring are just as good as in a younger woman. Women after 40 have had healthy children with relatively simple labors, although it must be said that complications are a little more common after this age. Such complications, however, are amenable to modern obstetric treatment and fear of them should not restrain women from bearing children.

2. The treatment of infantile uterus, at the present time, is unsatisfactory with and without endocrines. Conflicting reports are on record regarding the results in the use of estrogen with or without progestin or gonadotropic substance. Recently there has been reported some success in increasing the blood supply of the ovaries by making omental grafts on them, thus establishing a collateral circulation. The better blood supply, it is said, developed the uterus.

3. In the first place, proper education of a woman who has tocophobia will almost always succeed in removing groundless fears. Modern obstetrics has made so much progress that no woman should fear having a baby. In the second place, the adoption of a child is a mutual benefit. Both the mother and the child receive the greatest possible good, and it is probable in this case that the presence of one child may remove the unnatural apprehension of the mother. Distance from available obstetric service should not form any part in the discussion of the indications for obstetrics. Good roads, the automobile and the generosity of the profession serve to handle the situation satisfactorily.

SYPHILIS AND PULMONARY TUBERCULOSIS

To the Editor:—What is the current opinion on the treatment of syphilis complicating pulmonary tuberculosis? Are there any comprehensive articles on the subject?

M.D., Virginia.

ANSWER.—A recent report by Smith (*Am. J. Syph., Gonor. & Ven. Dis.* **22**:72-81 [Jan.] 1938) as well as one by Padget and Moore (*Am. Rev. Tuberc.* **33**:10 [Jan.] 1936) should be consulted.

In the past there has been a tendency to be conservative in treating syphilis in a tuberculous subject. Apparently this point of view is changing. Some investigators think that carefully controlled treatment of syphilis is even beneficial to a concomitant tuberculosis. Smith found that progressive tuberculosis is not more frequent in the treated syphilitic patient than in similar groups of nonsyphilitic tuberculous patients. The treatment of syphilis seems to lessen the frequency of progressive tuberculosis. Padget and Moore feel that the question is not entirely settled. It probably is well to use extreme care in treating a syphilitic patient with concomitant tuberculosis. Any remedy likely to set up reactions would be contraindicated. Either neoarsphenamine or mapharsen would be preferred for the arsenical. A bismuth salt causing little physical inconvenience is preferable, provided at the same time it furnishes an adequate antisyphilitic effect with little or no deleterious effects. For a hospitalized patient such a preparation would be an aqueous solution of sodium bismuth tartrate 2 cc. administered intramuscularly in the buttocks three times a week. For the ambulatory patient a weekly injection of a 10 per cent suspension in oil of bismuth subsalicylate is indicated. Neither preparation causes inconvenience, and each employed over a period of ten weeks would give an adequate bismuth effect for a course. The arsenicals in moderate sized doses could likewise be used in weekly injections for a term of ten weeks if no untoward contingencies arise. Probably three or four such alternating courses of the arsenicals and of the bismuth could be safely used, employing continuous treatment. Iodides are contraindicated in tuberculosis because of a possible danger of absorption of protective connective tissue walls formed around tuberculous foci.

SALINIZING AND CHLORINATING SWIMMING POOL

To the Editor:—What is the feasibility of salinizing an outdoor swimming pool to make the water isotonic or slightly hypertonic? The pool has a standard chlorinating filtration plant. Will you let me know if the water could be salinized without interfering with the chlorinization, and if so about what concentration of salt would be advisable?

AIDAN M. MULLETT, M.D., Colorado Springs, Colo.

ANSWER.—It is feasible, but fairly expensive, to salinize fresh swimming pool water. Normal sea water contains about 3 per cent of sodium chloride in solution or about 12½ tons per hundred thousand gallons. It is probable that a smaller amount would be more desirable in a swimming pool, depending of course on the clientele served.

Normal sea water can be effectively chlorinated for disinfection by the same methods used for fresh water, assuming that reasonably accurate chlorine control equipment is used and that proper tests are made for residual chlorine in the water to permit the operator to govern the rate of application of the chlorine. Another method of disinfecting sea water is by electrolysis.

PROBABLE PSYCHOGENIC SYNDROME

To the Editor:—A white man aged 25, an engineering student, weight 165 pounds (75 Kg.), height 5 feet 9 inches (175 cm.), complains of frontal headache, a sensation of pressure above the hard palate, fatigue and occasional nervousness. The headache has been present continuously for the past four years (it began in the second year of college), interfering tremendously with his ability to concentrate and making him so uncomfortable at times that he has little desire to see any one, although he is quite a good mixer and extremely cheerful ordinarily. There has never been any loss of weight, and the patient eats and sleeps well. During his schooling he had been troubled with financial worries but is now over this. He does not smoke or drink. The past history reveals an appendectomy ten years ago and a tonsillectomy two years ago. The personal history shows a tendency to worry, but there is no occasion for it at present. He does not take part in any physical activities at present. Physical examination revealed septal deviation of the nose causing a slight breathing obstruction. The lung fields were clear; the heart showed no abnormalities; the blood pressure was 135 systolic, 85 diastolic; the abdomen was normal. Neurologic examination revealed nothing of significance. The erythrocytes numbered 5,100,000 and leukocytes 8,500 with a normal differential count. The content of hemoglobin was 90 per cent. The urine was negative for albumin and sugar. The basal metabolic rate in three tests was —13.0, —11.5 and —12.0. The Wassermann reaction of the blood was negative. He has been on one-half grain (0.03 Gm.) desiccated thyroid three times a day for the past two months without any demonstrable change in his condition. Kindly make recommendations as to future therapy.

M.D., Pennsylvania.

ANSWER.—None of the symptoms described, singly or in combination, may be considered as due to any specific etiology. In fact, in many such cases there is a multiple etiology. As a whole, the case strongly suggests that the major etiologic agent is psychogenic. Because of its nonspecific nature and the suspicion of a psychic disturbance, the immediate approach is one aimed at exclusion of the more common organic causes.

Nothing about the case suggests migraine. In the absence of cranial trauma, a post-traumatic syndrome may be excluded. A thorough otologic investigation is imperative, and it should not be forgotten that such a syndrome may be caused by defective sinus drainage without active infection (Parkinson, S. N.: *Arch. Otolaryng.* **23**:344 [March] 1936, and **24**:594 [Nov.] 1936; THE JOURNAL, Jan. 21, 1939, p. 204). Any operative procedures on the sinuses should be avoided unless unequivocal pathologic changes are found.

A thorough ocular and oculomotor examination is essential, including emphasis on the activity of the intrinsic as well as the extrinsic eye muscles. A complete neurologic examination is indicated, including visual fields and cranial roentgenography to exclude intracranial tumor. A lumbar puncture is perhaps to be avoided because of the probability of postpuncture reaction in this patient. If, however, anything in the examination suggests an intracranial lesion, a lumbar puncture then becomes imperative.

After exclusion of organic causes, the psychic status of the patient should be investigated. This requires first of all an estimate of the personality basis and secondly an investigation of the immediate causative factors. The latter may after four years be somewhat obscured. The patient's symptoms now may be a habitual reaction to earlier incompatibilities. Often a combination of stresses will be found in the social, sexual, economic, intellectual and other spheres. As tact, skill, experience and

patience are necessary for such an investigation, a specialist in this field should conduct it. Often the revelation of the cause acts as a cure when understood and accepted by the patient. Prognosis will depend largely on the personality basis of the patient.

Sedatives per se are contraindicated as well as opiates and analgesics. Thyroid is of little or no value.

INTELLIGENCE QUOTIENT

To the Editor:—Have enough mass tests of the intelligence quotient by the Stanford-Binet and other methods been made to estimate the approximate number and percentage of the higher intelligence levels throughout the country or in New York? Can you tell me the approximate percentage, ratio or number of persons, or children alone, with intelligence quotients at levels of every 10 points including and above 160? What is the highest intelligence quotient recorded? At what age can the intelligence quotient first be considered as relatively stable for the rest of the child's testable age?

EMIL ROTHSTEIN, M.D., Brooklyn.

ANSWER.—Although many data have been collected concerning the Stanford-Binet intelligence tests, there are no complete data available of the approximate ratio or number of persons with intelligence quotients at every level. This would be possible only if the entire population were tested. The reports by Terman, Gesell and Pintner are informing. Most psychologists believe that an intelligence quotient of 190 is extremely rare. The relatively most stable period of establishing the intelligence quotient by the Stanford-Binet test is between the ages of 6 and 10 years.

The following references are recommended:

Baldwin, B. T., and Stecher, L. I.: Additional Data from Consecutive Stanford-Binet Tests, *J. Educ. Psychol.* **13**: 556, 1922.
Brown, R. R.: The Time Interval Between Test and Retest in Its Relation to the Constancy of the Intelligence Quotient, ibid. **24**: 81-86, 1933.
Dearborn, W. F.: The Mental and Physical Development of Public School Children, *School & Soc.* **41**: 485-593, 1935.
Pintner, R.: Intelligence Tests, *Psychol. Bull.* **32**: 453-472, 1935.
Terman, L. M.: The Intelligence of School Children, Boston, Houghton Mifflin Company, 1919.
Young, K.: The History of Mental Tests, *Ped. Sem.* **31**: 1-48, 1924.
Gesell, Arnold: Infancy and Human Growth, New York, Macmillan Company, 1928.

SOAP LAKE WATER FOR THROMBO-ANGIITIS OBLITERANS

To the Editor:—Do you have any information regarding the treatment of Buerger's disease at Soap Lake, Wash.? Presumably the patients are given baths of this water and also take water internally. I understand the government has built a hospital there for patients with this disease. We would appreciate any light thrown on the subject.

J. I. CHALEK, M.D., Minneapolis.

ANSWER.—A good deal has been written about the curative effects of water of Soap Lake for patients with thrombo-angiitis obliterans, or Buerger's disease. Several months ago one of the journals for the members of the American Legion carried an extensive article in which extravagant claims were made for the curative power of the water of Soap Lake. As far as known there has been no expert estimate by a physician of the beneficial effects of treatment of thrombo-angiitis obliterans at Soap Lake. Articles written by persons who are not physicians indicate an extreme lack of knowledge about the disease on which they write so freely.

DUCK SHOT IN EYE

To the Editor:—Have there been any reports of the effect or results following the introduction of duck shot into body tissue, duck shot at the present time being made of magnesium or an alloy of magnesium? I have a patient in whom such shot have been embedded in the orbital tissues.

PAUL G. MOORE, M.D., Cleveland.

ANSWER.—There are no reports on the effect of the introduction into the tissue of the orbit of shot composed of magnesium or its alloy. The presence of a foreign body produces well known effects, but whether or not the composition of such foreign bodies has a chemical effect on the tissue is not known.

CYSTOSCOPES

To the Editor:—What make and type of cystoscope would you advise for general diagnostic and therapeutic use in male and female?

M.D., Pennsylvania.

ANSWER.—There are many types of cystoscopes for special purposes. There are but a few that can be called universal in that they give satisfactory performances for observation, ureteral catheterization and operative cystoscopy. For general use, including the three mentioned, the Ravich universal cystoscope, which is a No. 21 French instrument, is satisfactory.

Council on Medical Education and Hospitals

ANNUAL CONGRESS ON MEDICAL EDUCATION AND LICENSURE

Thirty-Fifth Annual Meeting, held in Chicago, Feb. 13 and 14, 1939

(Continued from page 1189)

DR. J. H. MUSSER, New Orleans, in the Chair

COUNCIL ON MEDICAL EDUCATION AND HOSPITALS

FEBRUARY 14—MORNING

The Program of the National Committee for Mental Hygiene

DR. CLARENCE M. HINCKS, New York: For thirty years the National Committee for Mental Hygiene, thanks to the support of philanthropic citizens and great foundations, has been enabled to conduct surveys, to support research, to set up experimental demonstrations and to be active in the field of health education. There was organized three years ago the Mental Hospital Survey Committee. Dr. Samuel W. Hamilton, Dr. Grover Kempf and others connected with the group conducted studies in forty states, affecting 169 hospitals, and made surveys in three Canadian provinces.

A number of mental hospitals have attained creditable standards and compare favorably with the better general hospitals of the country, but there are institutions with arrangements that are utterly inadequate and that are a discredit to present day civilization. The average ratio of medical personnel to patients in mental hospitals of the United States is 1:259 as against the accepted standard of 1:150, and the hospitals are understaffed in relation to nurses and other personnel. Only two states are free from overcrowding in mental institutions. To make provision for the hospitalization of persons requiring institutional care but not now receiving it, there are needed approximately 130,000 additional mental hospital beds in the United States. The number of beds for all classes of mental patients varies from 175 to 688 per hundred thousand in the various states. Political interference involves the personnel of hospitals with every change of administration in fourteen states and occurs occasionally in at least eight more. This circumstance constitutes a greater threat to sound administration than shortage of personnel and equipment. The average expenditure in the United States for the treatment of the mentally ill is 7.02 per cent of the states' income, with a range of from 2.83 per cent to 18.49 per cent. One state spends $1.10 a day per patient for mental hospitalization, with another appropriating only 31.03 cents a day. The latter sum prohibits of course any genuine attempt to provide scientific and humanitarian services.

These facts are disconcerting and present a challenge to the nation to place essential services for the mentally ill on a basis in line with acceptable scientific standards. The situation demands the rating of mental hospitals to furnish the medical profession and the public with an indication of the status of institutional facilities in their particular state or locality.

The time has come, perhaps, for a reshaping of mental hospital arrangements. To meet the requirements of the aged and other groups, there are needed institutions with distinct hospital groupings, with various units specially designed, located and staffed for their specific purposes, with separate budgets, but with activities correlated and administered by a medical superintendent and his assistants.

While the national committee has had a profound interest in adequate hospitalization, its major concern has always been the prevention of mental disorders. We know that, in connection with the younger generation, 4 per cent will at some period in their lives enter mental hospitals as patients afflicted with insanity; that 2 per cent are mentally deficient, with insufficient capacity to compete on equal terms with their fellows; that 1 per cent will become delinquent, and that at least 8 per cent will be handicapped because of marked emotional instability, because of twists and distortions of personality and because of

nervous breakdowns and other forms of maladjustments. In other words, there are more than 5 million children in our schools today whose outlook is dark indeed because of precarious mental health, 5 million children who, in the absence of preventive measures, will ultimately cost this country hundreds of millions of dollars in the upkeep of mental institutions, jails and relief agencies and who are destined to add greatly to the sum total of human unhappiness and inefficiency.

Prevention can be fostered through cooperative undertakings with the teaching profession and through the activities of physicians in the education of patients and the public in mental health matters. There is presented here a challenge to medical men in the extension of their educational efforts with the public, to include matters relating to mental as well as physical hygiene.

The national committee is appreciative of the fact that trained personnel is requisite for all mental hygiene undertakings. It has given attention to the training of nurses, social workers and teachers. There is need for the continued activities of the Council on Medical Education and Hospitals of the American Medical Association in connection with internships in mental hospitals and related efforts. Of fundamental importance is the conduct of educational work to reach the men who are now actively engaged in medical practice throughout the country.

The problems presented by mental disorders will become more and more acute unless adequate arrangements are made for the prosecution of research to point the way to more effective programs of prevention and treatment. The national committee has been sensitive to this need for research and, through annual grants from the Scottish Rite Masons of the Northern Jurisdiction of the United States, is subsidizing eighteen research projects in dementia praecox. In addition a study has been made of the present status of research and the possibilities for further development in the publicly supported mental hospitals of the country. It was found that twenty of the 273 public institutions were well organized and staffed for investigatory work and that an additional thirty-two hospitals offered distinct possibilities for research. However, too little attention has been devoted to research activities in this domain. It is interesting to note that, in the field of industrial research, there are in this country 40,000 workers in 1,600 laboratories involving an annual expenditure of 300 million dollars. Psychiatric research has less than 1 per cent of such resources and personnel. What a contrast, and what a challenge to effect a more even balance in our civilization!

Fundamentals of Industrial Hygiene

DR. T. LYLE HAZLETT, Pittsburgh: Industrial hygiene may be defined as the application of medical science to health and its preservation among the working population with the object of establishing the most healthful environment for the worker. Medical service in industry can be divided into three cycles. The first cycle was prior to 1910, when such service was practically unknown. Employees injured while at work were sent to the office of the nearest physician, and the management gave little thought to the surgical care and rehabilitation of injured employees. The second or surgical cycle was predominant from 1910 to 1925, during which years came the development of the group system of production, with an increased concentration of workers. The greatest source of traumatic injuries during these years was in industry, and the result was the enactment of compensation laws. It became apparent in 1913 that many injuries could be prevented, and in that year the National Safety Council came into existence. The third cycle, which began in 1925, can be termed the medical-engineering cycle, since it became evident that many conditions existed in industry that had some bearing on the health of employees. During the last few years more attention has been given to the working environment in its relation to the well-being and conservation of health among workers. Thus there has been opened a new field of preventive medicine, with an industrial application. This requires active participation by physicians working in cooperation with engineers to determine actual measurements of existing conditions so that adequate control measures may be instituted. Recently some twenty-one states have added occupational disease acts to their compensation laws and there seems to be a gradual tendency to increase the number of so-called occupational diseases. In addition, many cases are being carried to the civil courts and are a subject of much concern.

In 1936 an industrial hygiene department was established at the University of Pittsburgh School of Medicine with the object of providing undergraduate and graduate instruction in industrial medical problems and establishing facilities for research on specific industrial problems as they pertain to the health and well-being of workers. In conjunction, an analytic laboratory has been established and hospital facilities are available for the investigation of occupational diseases, together with fellowships for graduates who desire to do such research work on industrial medical problems. An intensified graduate course of one week was offered last year and was well received.

Perhaps 90 per cent of the medical graduates have in the first years of practice some industrial or insurance contacts which bring them into the compensation field. Consequently there has arisen the necessity for extending the curriculum in our medical schools to provide instruction in industrial hygiene in its application to industrial life and to preventive medicine in industry. This can be done only by making this subject an entity in present day medical education. The part the physician should take and the responsibilities he should assume may be presented under four captions: 1. Safeguarding the health of the industrial workers in relation to their working environment. This includes air hygiene, lighting, noise, fatigue syndrome, sanitation, and placement of workers both from a mental and from a physical standpoint; making periodic examinations, especially of workers in known health hazards, and making definite recommendations to the management for the elimination of any unhealthful practices. 2. Medical care of occupational injuries and diseases and emergency medical care of nonoccupational illnesses occurring while the worker is on duty. 3. Research work. The constant development of new processes, new materials and new combinations of materials and their effects on the human body present to the graduate in medicine today his greatest opportunity in the study of occupational environment and in exploring new frontiers. 4. Health education. Much can be accomplished in an educational manner on the subjects of tuberculosis, heart disease and syphilis, for no group is more easily accessible or more desirous of knowing simple health facts than the industrially employed. If physicians do not realize the value of this avenue of transmitting worthwhile medical knowledge they will be acting contrary to the concepts of preventive medicine in its fullest extent.

It behooves them to assume the responsibility of guiding industry in its intra-industrial medical problems. Medical teaching institutions must give serious consideration to additional instruction so that the students may be able to assume their place in this age of complex and changing relationships in industrial life.

The Relation of Anesthesiology to Medical Education

DRS. RALPH M. WATERS, H. R. HATHAWAY and W. H. CASSELS, Madison, Wis.: This paper will be published in full in THE JOURNAL.

Tenure of Members of the Faculties in the Medical Schools

A. J. CARLSON, PH.D., Chicago: A questionnaire was mailed to the deans of the eighty-seven medical schools in the United States and Canada. Returns came in from eighty-five. This nearly 100 per cent response, I believe, stands as a record, and to it any merit in my summary and comments is largely due.

It appears on the returns that in fifteen medical schools indefinite tenure obtains at all ranks. I do not believe this is true. There must have been carelessness in checking. There should not, in my opinion, be initial indefinite tenure at the instructor rank. One should have a probationary period of from three to six years, during which time the instructor demonstrates his capacity in teaching and research. The large

number of schools, thirty-four, listed as having annual or biannual appointments of all ranks is also misleading. This group includes the medical schools in state universities, where state laws stipulate this kind of tenure. Actually, even on these faculties the full professor and in some cases the associate and assistant professor have, by practice, indefinite tenure. Indefinite tenure is accorded in eleven schools only to the full professors, in seventeen schools to the associate professors and in twelve schools to assistant professors also.

Apart from the importance of freedom and tenure for the highest performance in teaching and research, annual, biannual or term appointments, after the period of apprenticeship has passed, result in a less careful scrutiny of the performance of staff members by such responsible officers as chairmen of departments and deans. Also the failure to reappoint is a too ready and tempting door of exit in case of personal jealousy and prejudice, which one does not like to drag into the open, as would be done if discontinuance of service had to be preceded by a real hearing on the quality of performance.

Dismissal is accomplished by faculty vote in three schools, after recommendation of a committee of the faculty in twenty-two, on recommendation of the chairman of the department in eighteen and after a hearing before a committee in six. Forty-eight schools make no provision for a hearing.

Over half of the medical schools report that no provision for a genuine hearing exists in the statutes, by-laws or traditional administrative procedures of their school. I do not think that the majority of the executive officers (chairmen, deans, presidents, trustees) are that arbitrary. I think at least some of the deans made an error in checking on this item. But there are the figures. Twenty-five schools report that there is action by the faculty or a committee of the faculty prior to dismissal. This usually implies some form of a hearing for the party under accusation. In the case of the eighteen who dismiss on recommendation of the chairman alone, the accused party may or may not have a chance to be heard. Such hearings as are afforded are a matter largely of generosity and good sense rather than of requirement by the legal setup of the school, whether public or private. Trustees or governing boards are the legal entities of the school, and these legal entities usually have the power, under state laws or articles of incorporation, to dismiss a staff member at any time, without hearing and without giving any reasons for the dismissal, just as in a business corporation. The administration of a medical school worthy of the name must be above suspicion. Star chamber methods are out. Even a professor is entitled to be judged by his peers.

In the evolution of more efficient administrative procedures in medical schools these primary elements in the problem must be kept in mind: Real teaching and high grade research are most difficult tasks. Men with the high and rare powers involved can be neither driven nor commanded. Their performance flows from within, from the light and power of the individual. The essential administrative problem is the creation and maintenance of a milieu most suited to the labors of such men. It is slowly being learned, what should have been clear without experiment, that full time service on a medical faculty, despite its significance for research, is no cure-all as regards poor teaching. Not enough clearly superior men have been attracted to the profession to staff the faculties of medicine. What is to be done, in justice to the students, with those staff members who, because of sickness, premature senility, laziness or other misfortunes, fail to perform according to the promise of their earlier years? I think that the schools should act in their cases more frequently and objectively than they do. Throwing these men out does not seem a satisfactory answer, especially if the school has used what gifts they have until they are past 40. If there is going to be some such thing as an equity in one's post in relation to performance and time, it would seem that a person who has served society to the best of his ability even for five or ten years has earned part of the financial compensation due him after a service of thirty or forty years.

(To be continued)

Medical Examinations and Licensure

COMING EXAMINATIONS

STATE AND TERRITORIAL BOARDS

ALABAMA: Montgomery, June 20-22. Sec., Dr. J. N. Baker, 517 Dexter Ave., Montgomery.

ARIZONA: Phoenix, April 11-12. Sec., Dr. J. H. Patterson, 826 Security Bldg., Phoenix.

ARKANSAS: *Medical (Regular).* Little Rock, June 8-9. Sec., State Medical Board of the Arkansas Medical Society, Dr. L. J. Kosminsky, 317 State Line, Texarkana. *Medical (Eclectic).* Little Rock, June 8-9. Sec., Dr. Clarence H. Young, 1415 Main St., Little Rock.

CALIFORNIA: *Written examinations.* San Francisco, July 10-13, and Sacramento, Oct. 16-19. *Oral examinations* (required when reciprocity application is based on a state certificate or license issued ten or more years before filing application in California), Los Angeles, August 7, and San Francisco, Nov. 15. Sec., Dr. Charles B. Pinkham, 420 State Office Bldg., Sacramento.

COLORADO: Denver, April 5-7. Sec., Dr. Harvey W. Snyder, 831 Republic Bldg., Denver.

CONNECTICUT: *Basic Science.* New Haven, June 10. *Prerequisite to license examination.* Address State Board of Healing Arts, 1895 Yale Station, New Haven.

DELAWARE: Dover, July 11-13. Sec., Medical Council of Delaware, Dr. Joseph S. McDaniel, 229 S. State St., Dover.

DISTRICT OF COLUMBIA: *Basic Science.* Washington, June 26-27. *Medical.* Washington, July 10-11. Sec., Commission on Licensure, Dr. George C. Ruhland, 203 District Bldg., Washington.

FLORIDA: Jacksonville, June 19-20. Sec., Dr. William M. Rowlett, Box 786, Tampa.

GEORGIA: Atlanta, June. Joint-Sec., State Examining Boards, Mr. R. C. Coleman, 111 State Capitol, Atlanta.

HAWAII: Honolulu, April 10-13. Sec., Dr. James A. Morgan, 48 Young Bldg., Honolulu.

IDAHO: Boise, April 4-7. Address, Dir., Bureau of Occupational License, Rm. 355, State Capitol Bldg., Boise.

ILLINOIS: Chicago, April 11-13, June 20-22, and Oct. 17-19. Superintendent of Registration, Department of Registration and Education, Mr. Homer J. Byrd, Springfield.

INDIANA: Indianapolis, June 20-22. Sec., Board of Medical Registration and Examination, Dr. J. W. Bowers, 301 State House, Indianapolis.

IOWA: *Basic Science.* Des Moines, April 11. Dir., Division of Licensure and Registration, Mr. H. W. Grefe, State Department of Health, Capitol Bldg., Des Moines.

KANSAS: Kansas City, June 13-14. Sec., Board of Medical Registration and Examination, Dr. J. F. Hassig, 905 N. 7th St., Kansas City.

KENTUCKY: Louisville, June 7-9. Sec., State Board of Health, Dr. A. T. McCormack, 620 S. Third St., Louisville.

MARYLAND: *Medical (Regular).* Baltimore, June 20-23. Sec., Dr. John T. O'Mara, 1215 Cathedral St., Baltimore. *Medical (Homeopathic).* Baltimore, June 20-21. Sec., Dr. John A. Evans, 612 W. 40th St., Baltimore.

MICHIGAN: Ann Arbor and Detroit, June 14-16. Sec., Board of Registration in Medicine, Dr. J. Earl McIntyre, 100 W. Allegan St., Lansing.

MINNESOTA: *Basic Science.* Minneapolis, April 4-5. Sec., Dr. J. Charnley McKinley, 126 Millard Hall, University of Minnesota, Minneapolis. *Medical.* Minneapolis, April 18-20. Sec., Dr. Julian F. Du Bois, 350 St. Peter St., St. Paul.

MISSISSIPPI: Jackson, June. Asst. Sec., State Board of Health, Dr. R. N. Whitfield, Jackson.

MONTANA: Helena, April 4-5. Sec., Dr. S. A. Cooney, 216 Power Block, Helena.

NEBRASKA: *Basic Science.* Omaha, May 2-3. *Medical.* Omaha, June 8-9. Dir., Bureau of Examining Boards, Mrs. Clark Perkins, State House, Lincoln.

NEVADA: Carson City, May 1-3. Sec., Dr. John E. Worden, Capitol Bldg., Carson City.

NEW JERSEY: Trenton, June 20-21. Sec., Dr. Earl S. Hallinger, 28 W. State St., Trenton.

NEW MEXICO: Santa Fe, April 10-11. Sec., Dr. Le Grand Ward, 135 Sena Plaza, Santa Fe.

NEW YORK: Albany, Buffalo, New York, and Syracuse, June. Chief, Bureau of Professional Examinations, Mr. Herbert J. Hamilton, 315 Education Building, State Education Department, Albany.

NORTH CAROLINA: Raleigh, June 19. Sec., Dr. William D. James, The Hamlet Hospital, Hamlet.

NORTH DAKOTA: Grand Forks, July 5-8. Sec., Dr. G. M. Williamson, 4½ S. Third St., Grand Forks.

OKLAHOMA: *Basic Science.* Oklahoma City, May 15. Sec. of State, Hon. C. C. Childress, State Capitol, Oklahoma City. *Medical.* Oklahoma City, June 14. Sec., Dr. James D. Osborn, Jr., Frederick.

OREGON: *Basic Science.* Corvallis, July 8, and Portland, Oct. 28. Sec. State Board of Higher Education, Mr. Charles D. Byrne, University of Oregon, Eugene.

PENNSYLVANIA: Philadelphia and Pittsburgh, July. Sec., Board of Medical Education and Licensure, Dr. James A. Newpher, 400 Education Bldg., Harrisburg.

RHODE ISLAND: Providence, April 6-7. Chief, Division of Examiners, Mr. Robert D. Wholey, 366 State Office Bldg., Providence.

SOUTH CAROLINA: Columbia, June 27. Sec., Dr. A. Earle Boozer, 505 Saluda Ave., Columbia.

SOUTH DAKOTA: Rapid City, July 18-19. Director, Medical Licensure, Dr. G. J. Van Heuvelen, State Board of Health, Pierre.

TEXAS: June. Sec., Dr. T. J. Crowe, 918 Mercantile Bldg., Dallas.

VERMONT: Burlington, June 14-16. Sec., Board of Medical Registration, Dr. W. Scott Nay, Underhill.

VIRGINIA: Richmond, June 21-23. Sec., Dr. J. W. Preston, 30½ Franklin Road, Roanoke.

WISCONSIN: Milwaukee, June 27-30. Sec., Dr. Henry J. Gramling, 2203 S. Layton Blvd., Milwaukee.

NATIONAL BOARD OF MEDICAL EXAMINERS SPECIAL BOARDS

Examinations of the National Board of Medical Examiners and Special Boards were published in THE JOURNAL, March 25, page 1189.

Maine November Examination

Dr. Adam P. Leighton, secretary, Maine Board of Registration of Medicine, reports the written examination held in Portland, Nov. 8-9, 1938. The examination covered ten subjects and included 100 questions. An average of 75 per cent was required to pass. Ten candidates were examined, five of whom passed and five failed. Three physicians were licensed by reciprocity and three physicians were licensed by endorsement after an oral examination. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
Boston University School of Medicine		(1938)	88
Tufts College Medical School		(1937)	79
Jefferson Medical College of Philadelphia		(1937)	81
University of Vermont College of Medicine		(1937)	80
McGill University Faculty of Medicine		(1937)	91

School	FAILED	Year Grad.	Per Cent
Medizinische Fakultät der Universität Wien		(1936)	73
Friedrich-Wilhelms-Universität Medizinische Fakultät, Berlin		(1919)	70
Georg August-Universität Medizinische Fakultät, Göttingen		(1924)	70
Rheinische Friedrich-Wilhelms-Universität Medizinische Fakultät, Bonn		(1933)	69
Regia Università degli Studi di Roma. Facoltà di Medicina e Chirurgia		(1935)	74

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Univ. of Michigan Department of Med. and Surgery		(1899)	Michigan
University of Michigan Medical School		(1928)	Michigan
University of Virginia Department of Medicine		(1931)	Virginia

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
Tufts College Medical School		(1932)	N. B. M. Ex.
Cornell University Medical College		(1934), (1936)	N. B. M. Ex.

North Carolina Reciprocity and Endorsement Report

Dr. W. D. James, secretary, North Carolina State Board of Medical Examiners, reports fifteen physicians licensed by reciprocity and two physicians licensed by endorsement after an oral examination held at Raleigh, Dec. 12, 1938. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Louisville Medical Department		(1911)	Kentucky
University of Buffalo School of Medicine		(1918)	New York
University of Rochester School of Medicine		(1930)	Maryland
Duke University School of Medicine		(1932)	W. Virginia
University of Cincinnati College of Medicine		(1931)	Ohio
University of Pennsylvania School of Medicine		(1935)	S. Carolina, (1936) Pennsylvania
Medical College of the State of South Carolina		(1921)	S. Carolina
Meharry Medical College		(1937)	Tennessee
Medical College of Virginia		(1931), (1935), (1936)	Virginia
Univ. of Virginia Department of Med.		(1927), (1933), (1936)	Virginia

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
Duke University School of Medicine		(1934), (1936)	N. B. M. Ex.

Ohio Reciprocity and Endorsement Report

Dr. H. M. Platter, secretary, Ohio State Medical Board, reports twenty-six physicians licensed by reciprocity and four physicians licensed by endorsement Oct. 4, 1938. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Colorado School of Medicine		(1936)	New York
Indiana University School of Medicine		(1936, 2)	Indiana
University of Kansas School of Medicine		(1934)	Kansas
University of Louisville School of Medicine		(1937)	Kentucky
Tulane Univ. of Louisiana School of Medicine		(1932), (1937)	Louisiana
University of Maryland School of Medicine and College of Physicians and Surgeons		(1930)	New York
Detroit College of Medicine and Surgery		(1927)	Michigan
University of Michigan Medical School		(1930), (1933), (1934), (1936, 2)	Michigan
St. Louis University School of Medicine		(1936), (1938)	Missouri
Jefferson Medical College of Philadelphia		(1933)	Penna.
Temple University School of Medicine		(1932)	New Jersey
Meharry Medical College		(1921)	Missouri
University of Pennsylvania School of Medicine		(1932)	Penna.
University of Vermont College of Medicine		(1936), (1937)	Vermont
Medical College of Virginia		(1937)	Virginia
Marquette University School of Medicine		(1937)	Wisconsin
Laval University Faculty of Medicine		(1933)	New York
Magyar Királyi Pázmány Petrus Tudományegyetem Orvosi Fakultasa, Budapest		(1929)	New York

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
Georgetown University School of Medicine		(1934), (1937)	N. B. M. Ex.
Harvard University Medical School		(1936)	N. B. M. Ex.
Duke University School of Medicine		(1936)	N. B. M. Ex.

Book Notices

Our Common Ailment. Constipation: Its Cause and Cure. By Harold Aaron, M.D., Medical Consultant to Consumers Union of United States. Cloth. Price, $1.50. Pp. 192, with 2 illustrations. New York: Dodge Publishing Company, 1938.

In his position as medical consultant to the Consumers' Union of the United States, Dr. Aaron has had occasion to acquaint himself with the composition of most of the laxatives, purgatives and gummy preparations which are now offered to the American people for the relief of constipation. All physicians can read the chapter on this topic with much interest and profit. Dr. Aaron has familiarized himself with the physiology of the colon so far as it is known; also the pathologic physiology of constipation. His pronouncements are unusually sane, and he is doing a service by showing people how much buncombe there is in much of what they have been told about the bowel. The book should help to clear people's minds of fear with regard to such things as intestinal autointoxication, acidosis and ptosis of the colon. It will tell them that most of what is called colitis today should not be called colitis and is not to be worried about, because it is not associated with any true inflammation or ulceration of the bowel. In these cases the bowel itself appears to be normal, but it tends to contract spasmodically and to excrete an excessive amount of mucus because of excessive stimulation by the patient's jangling nerves. Although the book was written primarily for a lay audience, it is decidedly worth reading by medical men and even by gastro-enterologists of some experience. For many patients a book like this could be useful. It will answer many of their questions and will give them many suggestions for the solution of their problem.

Allergic Diseases: Their Diagnosis and Treatment. By Ray M. Balyeat, M.A., M.D., F.A.C.P., Associate Professor of Medicine, University of Oklahoma Medical School, Oklahoma City, Oklahoma. Assisted by Ralph Bowen, B.A., M.D., F.A.A.P., Chief of Pediatric Section, Balyeat Hay Fever and Asthma Clinic, Oklahoma City. Fifth edition. Cloth. Price, $6. Pp. 547, with 145 illustrations. Philadelphia: F. A. Davis Company, 1938.

The first edition of this book was written for the instruction of the public. The fifth edition is primarily for the general practitioner. Unfortunately the gradation from the lay to the medical textbook has been incomplete. The information included is much too detailed for any lay reader and too little for the physician. The organization is poor. It is directed too much to arouse interest in scattered but practical questions rather than to give a coherent, well balanced discussion of allergy. The greatest fault probably lies in an almost complete lack of discussion of the theory of allergy, especially of the pathology and the pathogenesis of the allergic conditions. A general discussion of immunology is completely omitted. The book gives one the impression that allergic conditions of all types are in a large proportion of cases diagnosed by various types of cutaneous tests. Even in the chapters on urticaria and migraine this technic is almost completely relied on. Dietary studies through diaries and elimination diets are not given or discussed in these chapters. They are left for a brief final chapter, which is devoted primarily to recipes for wheat, egg and milk free preparations. These are excellent, but for their proper use the reader would have to consult a more thorough reference book. The chapter on allergic dermatoses is weak. It is devoted largely to case reports rather than to a thorough discussion of the pathology and clinical pictures of infantile eczema, atopic dermatitis and contact dermatitis. In the chapter on treatment of intractable asthma and bronchiectasis most of the thirty-eight pages are devoted to a discussion of the technic and benefits of iodized oil instillation. All references to this are from sources favorable to this therapy. Unfavorable criticism, as the review of the literature and the work by Criep and Hampsey, is completely ignored. Because of the brevity of theoretical discussion, erroneous impressions are given through such a statement, under the brief discussion of the chemistry of pollen (page 92), as "However, it is definitely shown that the substance to which patients develop a specific sensitivity is not protein." This conclusion is not accepted by most workers. Another error, which is serious from a practical rather than an academic point of view, is the statement (page 117) that horse sensitive patients

have symptoms from furniture containing horsehair. This material as prepared for such use is not capable of producing symptoms because of the processes used (usually boiling in alkalis and soaking in solution of formaldehyde). The pollen charts of various regions are numerous and excellent. The other illustrations are often unnecessary and meaningless (the pictures of a horse, cows, hogs, sheep, rabbits, common vegetables, a bag of flour, a loaf of bread and a labeled package of cereal, all to emphasize common causes of allergy). A few well chosen words supported by statistics would serve the intelligent reader to a greater purpose.

Heart Disease and Pregnancy. By Crighton Bramwell, M.A., M.D., F.R.C.P., Physician, Manchester Royal Infirmary, and Edith A. Longson, M.B., Ch.B., D.P.H. With a Foreword by Sir Ewen Maclean, M.D., F.R.C.P., LL.D. Cloth. Price, $3. Pp. 194, with 57 illustrations. New York, London & Toronto: Oxford University Press, 1938.

This small book contains considerable information, both pertinent and irrelevant; many of the illustrations and much of the text, however, present merely the fundamentals of heart disease and might well be omitted.

The authors give a valuable analysis of the data on 350 cases of their own and compare them with series already published by McIlroy and Rendel in 1931 (200 cases), Carr and Hamilton in 1933 (500 cases) and Watson in 1933 (240 cases). Of the authors' series 89.7 per cent were rheumatic, 4 per cent were congenital and 6.3 per cent were miscellaneous. Ninety-five patients had a trivial to slight amount of heart disease and three of these (3.2 per cent) died. These were called class 1. The other 284 had more severe heart disease, and of these twenty-two (7.8 per cent) died. These were called class 2. Thus there was a total mortality of twenty-five of the 379, or 6.6 per cent. There were 156 primigravidas; two of forty-four of class 1, or 4.9 per cent, died and eleven of 112 of class 2, or 10 per cent, died, making a total death rate among the primigravidas of 8.6 per cent (thirteen of 156). There were 223 multiparas; of fifty-one belonging to class 1 one died (1.9 per cent) and of 172 belonging to class 2 eleven died (6.4 per cent), making a total death rate among the multiparas of 5.3 per cent (twelve of 223). There were twenty-four patients with auricular fibrillation in the whole series of 379 cases. The death rate among these was 29.2 per cent as compared with the total mortality of 6.6 per cent.

As the result of their observations the authors were inclined to modify their previous opinion and to believe that "although auricular fibrillation does undoubtedly add considerably to the risk of pregnancy it does not constitute a bar to pregnancy provided the patient can be kept under observation and receive adequate treatment." Their case 113 is of interest in this respect:

> A working-class woman who was in the Manchester Royal Infirmary, with rheumatic heart disease, at the age of 16 in 1913 came under our care with auricular fibrillation, mitral stenosis and great cardiac enlargement, following her third confinement in 1923. Normal rhythm was restored with quinidine and was maintained for two years in spite of a further pregnancy with a normal confinement in 1924. In 1925 fibrillation recurred, and we therefore terminated her fifth pregnancy. Between 1926 and 1930 another pregnancy was terminated, and she had two natural abortions. In 1931 she again became pregnant but felt so fit that she begged us to allow pregnancy to continue. With much reluctance and no slight misgiving we ultimately gave our consent. She was delivered by cesarean section. Convalescence was uneventful. Six years have since elapsed and there is no evidence that her cardiac condition has been aggravated by this confinement. This woman is able to look after her home and three children single handed. To our knowledge she was fibrillating fourteen years ago and has been fibrillating continuously for twelve years. During that time she has given birth to two healthy children in addition to having two therapeutic and two natural abortions.

The authors have never used quinidine in the treatment of fibrillation in pregnant women, partly because of the danger of producing abortion but chiefly because the type of case with which they were dealing was not thought suitable for quinidine. With respect to congestive heart failure they write:

> Twenty-six of the patients in our series exhibited evidence of heart failure with venous engorgement and edema at the time they first came under observation. Of these, ten died prior to or soon after confinement and four others are known to have died within the next six years, giving a total mortality of 53 per cent. Expressed in another way, out of fifteen of our patients who died from cardiac causes, either prior to or within six months of confinement, ten had exhibited signs of congestive heart failure when first seen. These figures speak for themselves.
>
> The prognosis, however, is not always unfavorable, for five of our patients who developed congestive heart failure, during the later months of pregnancy, responded satisfactorily to treatment. Success in treatment depends chiefly on the early recognition of signs of failure. For this reason we wish to emphasize the importance of adequate ante partum supervision, especially with a view to detecting heart failure in its initial stages.

Of 312 patients with valvular disease, 260 had mitral stenosis alone. The others had mostly aortic valve disease alone, of which there were six, or aortic complicating mitral. The mortality was highest in the uncomplicated mitral stenosis cases, with twenty deaths in 260 cases. There were only two deaths in the other fifty-two cases.

The authors disagree entirely with the statement expressed by Donovan in 1936 that congenital heart disease constitutes a contraindication to pregnancy. Only one of the sixteen cases caused them any anxiety and that case, Fallot's tetralogy, was not fatal. There were in the total series only five cases of thyrotoxic heart disease, and only twenty with a systolic pressure of 140 mm. or higher. Not a single case was diagnosed as cardiovascular syphilis. Their experience with therapeutic abortion they summarize:

> Termination of pregnancy will not cure heart disease. It should only be performed when treatment of the heart condition has failed and when the continuance of pregnancy endangers life or entails grave risk of producing a permanent aggravation of the cardiac disability. In other words, in patients with heart disease the indications for therapeutic abortion are identical with the contraindications to pregnancy. When such patients are seen during the first three months, emptying the uterus is a relatively safe procedure. After the end of the third month the risk is greatly increased, in view of the danger from shock and hemorrhage. Then the wisest course is to allow pregnancy to continue until the child is viable, and to deliver by cesarean section.
>
> Therapeutic abortion was performed in twenty-four of our cases (7 per cent), in eight on account of auricular fibrillation, in two for heart failure and in the other fourteen on account of the poor general condition of the patient or the fact that they manifested increasing respiratory distress, which did not respond to treatment. Two of these patients died (patients 175 and 260).

In this country there is a belief that cesarean section is to be avoided in most cases.

At the end of the book the authors write: "Taking all aspects into account, we consider that it is usually unwise for a woman with a slight heart lesion to have more than two children, and when the lesion is of moderate severity she should be content with one."

Manual of Diets, Montefiore Hospital, New York City. Third edition. Paper. Pp. 33. New York, 1938.

Although considerations of diet and nutrition are important in the management of any disease, not many hospitals have a formal committee on nutrition. The Montefiore Hospital of New York has such a committee, and for the guidance of physicians and other members of the staff this committee compiled a manual of diets, now appearing in the third edition. The manual sets forth a series of standard dietary prescriptions. Each diet appears in outline form, usually on a single page or less, and the information provided includes a list of indications, characteristics, foods allowed, foods to be avoided and a typical menu for one day. It might be well if future editions of this useful manual were to include menus for several days. Probably this isn't necessary, but such information would be useful to practitioners who desire to give suitable instructions for patients in the home. There are no data provided on the cost of special diets but it is mentioned that the average cost of a special diet is approximately 50 per cent greater than the average cost of a general or routine diet.

Electrotherapy and Light Therapy. By Richard Kovács, M.D., Clinical Professor and Director of Physical Therapy, New York Polyclinic Medical School and Hospital, New York. Third edition. Cloth. Price, $7.50. Pp. 744, with 308 illustrations. Philadelphia: Lea & Febiger, 1938.

The publication of the third edition of this textbook within five years is an indication of its popularity and usefulness. An examination of the extensive revision and enlargement of this edition also reveals that the author has included many of the recent advances in the rapidly growing field of physical therapy in general and electrotherapy and light therapy in particular. There are enlargements of sections on newer methods in electrical treatment, with two new chapters on short wave diathermy and a new chapter on artificial fever by electrical means, as well as revision of the whole volume. While the book was primarily intended to present that part of modern physical therapy which practicing physicians may themselves carry on in their office, the scope is so broad that

it should be of value to students interested in a nonmathematical survey of the physics of electricity and radiant energy and the physiologic principles involved in the production or use of electrical and radiant energy in the body. The book begins with basic electrophysics, avoiding a complicated mathematical approach, and leads up to the physics of various electromedical currents and radiant energy, along with a description of the devices producing them and their physiologic effects. The description of the basic physiology of electrical stimulation and the theories of bio-electric currents is more detailed than that in most physiology textbooks. There is a valuable new chapter, for instance, correlating electrophysiology with electrotherapy and an expansion of many chapters on general theory such as those on galvanic current, electrophoresis and chronaxia. The last section of the book is devoted more particularly to applied electrotherapy and light therapy for the guidance of the physician. These details of clinical application seem quite complete, and they correlate the use of simpler methods of physical therapy with the more complicated electrical ones. Among the most important aspects of the book seem to be the well rounded discussions of various methods and theories, as well as the many references and the expanded glossary included.

Diseases of Women. By Ten Teachers under the direction of Clifford White, M.D., B.S., F.R.C.P. Edited by Sir Comyns Berkeley, Clifford White and Frank Cook. Sixth edition. Cloth. Price, $6. Pp. 492, with 158 illustrations. Baltimore: William Wood & Company, 1938.

In this edition the section on the physiology and disorders of menstruation has been completely revised. These data in their new form are lucid, helpful and as accurate as a simplified version can be. The volume presents fewer of the homely old British usages, such as the brisk purge for any and all contingencies, the rather loose application of dilation and curettage, the tardy adoption of the intravenous route for the administration of fluids and the uterine injection of hot glycerin for acute endometritis. One might say that the book has been considerably polished up. Most important in this connection is a complete capitulation to the argument for the conservative versus the radical surgical management of acute and subacute pelvic infection. The former volume was to be strongly criticized for its obvious lack of conviction in this connection. In general the book is amazingly consistent, considering its compilation by diversified authors. No doubt the open critical analysis of each in relation to the work of the others contributes to this evenness. The book is sound, authoritative, simple and consistently helpful in spite of minor discrepancies.

Health in Middle Life. By Ethel Browning, M.D. Needs of To-Day Series No. 21, edited by W. E. Boardman. Cloth. Price, 3s. 6d. Pp. 249. London: Rich & Cowan, Ltd., 1938.

As more and more human beings survive middle age, the number of books of advice for people in this period increases. The reason is, of course, that the transition period is attended by many symptoms of a special type and that the average person has not been suitably informed as to the normal character of the changes that occur. This book, written by a British woman physician, opens with a discussion of the effects of middle age, particularly on the glands and on resistance to disease. It discusses the physical character of the man and woman of 40; then the transition period, and next the program to be followed after the transition period. It is a sane, dependable book of advice.

The British Encyclopaedia of Medical Practice Including Medicine, Surgery, Obstetrics, Gynaecology and Other Special Subjects. Under the General Editorship of Sir Humphry Rolleston, Bt., G.C.V.O., K.C.B., M.D. Volume IX: Mumps to Pneumothorax, Spontaneous. Cloth. Price, $12. Pp. 752, with 127 illustrations, including 10 plates. London & Toronto: Butterworth & Co. (Publishers), Ltd., 1938.

In this volume articles of special interest are concerned with the usual topics that would fall in the alphabetical classifications, but there are other special articles on such topics as professional negligence, edema (because the British spell it oedema), pain, paralysis, disputed paternity, the pituitary gland and pneumonia. Peptic ulcer is discussed by Dr. Thomas Hunt, edema by Jonathan C. Meakins of McGill University, thus far apparently the only Canadian to be selected as a contributor. This volume is well up to the standard of the previous items in this system of medical practice.

Medical Occupations Available to Boys When They Grow Up. By Lee M. Klinefelter, B.S., M.A. Cloth. Price, $2. Pp. 287, with 68 illustrations. New York: E. P. Dutton & Company, Inc., 1938.

The young man who is interested in learning some of the various ways in which medicine has extended its scope and something about the innumerable opportunities which now exist in fields closely associated with the practice of medicine will find in this guide book the necessary information. The author discusses the route by which one enters the practice of medicine and then has individual chapters dealing with the various technical specialties such as physical therapy, the clinical laboratory, and the x-rays; also chapters on dentistry, nursing, optometry, pharmacy and veterinary medicine. The book is written in the form of a conversation between a boy and a doctor. It is nicely illustrated and should be a most useful work for any boy finishing high school and ready to choose an occupation in the medical field.

Rheumatism. By Bertam S. Nissé, M.D., M.R.C.P., Hon. Physician, British Red Cross Clinic for Rheumatism, Peto Place, London. Cloth. Price, 5s. Pp. 168. London: John Bale Medical Publications, Ltd., 1938.

This little book is a simple attempt to describe briefly the differential diagnosis and principal aspects of treatment of so-called rheumatism, including rheumatic fever, fibrositis, arthritis and gout. There is possibly some oversimplification in presentation, and the list of useful methods of treatment, especially for rheumatoid arthritis, would require careful selection for the individual patient. The general practitioner whose knowledge of these diseases is extremely fragmentary would find this volume helpful, but it can scarcely be considered comparable to some of the other more complete and more scientific recent books on or reviews of the subject.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Medical Practice Acts: Revocation of License for Procuring Abortions.—The medical practice act of New York authorizes the board of regents of the University of the State of New York to revoke the license of any physician who undertakes or engages "in any manner or by any ways or means whatsoever to procure or to perform any criminal abortion." By authority of this act the board of regents revoked the license of the petitioner, a physician, whereupon he appealed to the supreme court of New York, appellate division, third department.

The evidence presented before the board of regents, said the supreme court, showed that three female special investigators of the state department of education visited the petitioner's office on separate occasions and that on the occasion of each visit the petitioner made a vaginal examination of the investigator, advised that a condition of pregnancy existed, stated that he was willing to perform an abortion and fixed a date for the performance of it. The evidence further showed that he charged a fee of $5 for each examination and agreed to perform the abortion in each case for a fee of $100 and an additional $10 for the administration of the anesthetic. In the opinion of the court, the board of regents was justified in finding that the act in question had been violated. Accordingly, the court affirmed the action of the board of regents in revoking the petitioner's license.—*Kahn v. Board of Regents of University of State of New York (N. Y.), 4 N. Y. S. (2d) 233.*

Malpractice: Removal of Uvula and Soft Palate During Tonsillectomy.—The plaintiff, a minor, by his guardian ad litem sued the defendant for malpractice, alleging that during a tonsillectomy performed on him by the defendant the uvula and a portion of the soft palate were removed and the anterior and posterior pillars of the throat were injured. At the conclusion of the plaintiff's testimony, the trial court directed a verdict in favor of the defendant and the plaintiff appealed to the district court of appeal, second district, division 1, California.

The physician contended that the trial court properly directed a verdict in his favor because there was no medical testimony

adduced at the trial with respect to the propriety of his conduct. In this case, said the district court, the evidence revealed a situation which clearly takes it out of that class of cases in connection with which expert testimony is indispensable. The court then quoted from *Evans* v. *Roberts*, 172 Iowa 653, 154 N. W. 923, as follows:

> While it may be true that, had the operation upon the adenoids been unsuccessful and disappointing, no inference of negligence or want of skill would arise therefrom, it does not follow that this rule applies with the same force to an injury done by him to sound and undiseased parts of the plaintiff's person, which he was not called upon to treat and did not pretend to treat. If a surgeon, undertaking to remove a tumor from a person's scalp, lets his knife slip and cuts off his patient's ear, or if he undertakes to stitch a wound on the patient's cheek, and by an awkward move thrusts his needle into the patient's eye, or if a dentist, in his haste, leaves a decayed tooth in the jaw of his patient and removes one which is perfectly sound and serviceable, the charitable presumptions, which ordinarily protect the practitioner against legal blame where his treatment is unsuccessful, are not here available. "It is a matter of common knowledge and observation that such things do not ordinarily attend the service of one possessing ordinary skill and experience in the delicate work of surgery. It does not need scientific knowledge or training to understand that, ordinarily speaking, such results are unnecessary and are not to be anticipated, if reasonable care be exercised by the operator."

The court also quoted from *Ales* v. *Ryan*, 8 Calif. (2d) 82, 64 P. (2d) 409, as follows:

> Where the thing is shown to be under the management of the defendant or his servants, and the accident is such as in the ordinary course of things does not happen if those who have the management use proper care, it affords reasonable evidence, in the absence of explanation by the defendant, that the accident arose from want of proper care.

It would appear, continued the district court of appeal, to be a matter of common knowledge that the removal of a portion of the soft palate and of the uvula is no part of a tonsillectomy. The location of the tonsils is a matter easily observable to any one, and the location and function of the uvula and soft palate are matters of common knowledge and of which a court can take judicial notice. Therefore there was evidence in the record, at the time the motion for a directed verdict was granted, sufficient to support a verdict for the plaintiff had such verdict been returned. The trial court, therefore, erred in directing the verdict; the jury should have been permitted to determine the matter of the defendant's negligence. The judgment in favor of the defendant was accordingly reversed and the cause was remanded.—*Thomsen v. Burgeson (Calif.), 79 P. (2d) 136.*

Society Proceedings

COMING MEETINGS

American Medical Association, St. Louis, May 15-19. Dr. Olin West, 535 North Dearborn St., Chicago, Secretary.

Alabama, Medical Association of the State of, Montgomery, April 18-20. Dr. D. L. Cannon, 519 Dexter Ave., Montgomery, Secretary.

American Academy of Tuberculosis Physicians, St. Louis, May 13-14. Dr. Arnold Minnig, 638 Metropolitan Bldg., Denver, Secretary.

American Association for the Study of Goiter, Cincinnati, May 22-24. Dr. W. Blair Mosser, 133 Biddle St., Kane, Pa., Secretary.

American Association for the Study of Neoplastic Diseases, Detroit, April 6-8. Dr. Eugene R. Whitmore, 2139 Wyoming Avenue N.W., Washington, D. C., Secretary.

American Association for Traumatic Surgery, Hot Springs, Va., May 8-9. Dr. Ralph G. Carothers, 409 Broadway, Cincinnati, Secretary.

American Association of Anatomists, Boston, Apr. 6-8. Dr. E. R. Clark, University of Pennsylvania School of Medicine, Philadelphia, Secretary.

American Association of Genito-Urinary Surgeons, Williamsburg, Va., May 24-26. Dr. Charles C. Higgins, 2050 East 93d St., Cleveland, Secretary.

American Association of Pathologists and Bacteriologists, Richmond, Va., Apr. 6-7. Dr. Howard T. Karsner, 2085 Adelbert Rd., Cleveland, Secretary.

American Association of the History of Medicine, Atlantic City, N. J., April 30-May 1. Dr. Henry E. Sigerist, 1900 Monument St., Baltimore, Secretary.

American Association on Mental Deficiency, Chicago, May 3-6. Dr. E. Arthur Whitney, Washington Road, Elwyn, Pa., Secretary.

American Dermatological Association, Montebello, Canada, May 31-June 3. Dr. Fred D. Weidman, University of Pennsylvania Medical Laboratories, Philadelphia, Secretary.

American Gastro-Enterological Association, Atlantic City, N. J., May 1-2. Dr. Russell S. Boles, 1901 Walnut St., Philadelphia, Secretary.

American Gynecological Society, White Sulphur Springs, W. Va., May 22-24. Dr. Richard W. TeLinde, 11 East Chase St., Baltimore, Secretary.

American Heart Association, St. Louis, May 12-13. Dr. Howard B. Sprague, 50 West 50th St., New York, Secretary.

American Laryngological Association, Rye, N. Y., May 24-26. Dr. James A. Babbitt, 1912 Spruce St., Philadelphia, Secretary.

American Laryngological, Rhinological and Otological Society, Chicago, May 10-11. Dr. C. Stewart Nash, 277 Alexander St., Rochester, N. Y., Secretary.

American Medico-Legal Association, Chicago, May 12-13. Dr. Michel Pijoan, 124 Commonwealth Ave., Boston, Secretary.

American Otological Society, New York, May 22-23. Dr. Thomas J. Harris, 104 East 40th St., New York, Secretary.

American Pediatric Society, Sky Top, Pa., Apr. 27-29. Dr. Hugh McCulloch, 325 North Euclid Ave., St. Louis, Secretary.

American Physiological Society, Toronto, Canada, Apr. 26-29. Dr. A. C. Ivy, 303 East Chicago Ave., Chicago, Secretary.

American Psychiatric Association, Chicago, May 8-12. Dr. Arthur H. Ruggles, Butler Hospital, Providence, R. I., Secretary.

American Society for Clinical Investigation, Atlantic City, N. J., May 1. Dr. Isaac Starr, University of Pennsylvania Hospital, Philadelphia, Secretary.

American Society for Experimental Pathology, Toronto, Canada, April 26-29. Dr. Paul R. Cannon, Dept. of Pathology, University of Chicago, Chicago, Secretary.

American Society for Pharmacology and Experimental Therapeutics, Toronto, Canada, Apr. 26-29. Dr. G. Philip Grabfield, 319 Longwood Ave., Boston, Secretary.

American Society of Anesthetists, New York, Apr. 14. Dr. Paul M. Wood, 745 Fifth Ave., New York, Secretary.

American Society of Biological Chemists, Toronto, Canada, Apr. 26-29. Dr. C. G. King, Univ. of Pittsburgh, Dept. of Chemistry, Pittsburgh, Secretary.

American Society of Clinical Pathologists, St. Louis, May 12-14. Dr. Alfred S. Giordano, 531 N. Main St., South Bend, Ind., Secretary.

American Surgical Association, Hot Springs, Va., May 11-13. Dr. Charles G. Mixter, 319 Longwood Ave., Boston, Secretary.

American Therapeutic Society, St. Louis, May 12-13. Dr. Joseph F. Elward, 1726 Eye St. N.W., Washington, D. C., Secretary.

American Urological Association, White Sulphur Springs, W. Va., May 29-June 1. Dr. Clyde L. Deming, 789 Howard Ave., New Haven, Conn., Secretary.

Arizona State Medical Association, Phoenix, Apr. 13-15. Dr. D. F. Harbridge, 15 East Monroe St., Phoenix, Secretary.

Arkansas Medical Society, Hot Springs National Park, May 8-10. Dr. W. R. Brooksher, 602 Garrison Ave., Fort Smith, Secretary.

Associated Anesthetists of the United States and Canada, St. Louis, May 15. Dr. F. H. McMechan, 318 Hotel Westlake, Rocky River, Ohio, Secretary General.

Association for the Study of Internal Secretions, St. Louis, May 13-14. Dr. E. Kost Shelton, 921 Westwood Blvd., Los Angeles, Secretary.

Association of American Physicians, Atlantic City, N. J., May 2-3. Dr. Hugh J. Morgan, Vanderbilt University Hospital, Nashville, Tenn., Secretary.

Association of Military Surgeons of the United States, Washington, D. C., May 8-10. Dr. H. L. Gilchrist, Army Medical Museum, Washington, D. C., Secretary.

California Medical Association, Del Monte, May 1-4. Dr. George H. Kress, 450 Sutter St., San Francisco, Secretary.

Connecticut State Medical Society, New Haven, May 25-26. Dr. Creighton Barker, 258 Church St., New Haven, Secretary.

District of Columbia, Medical Society of the, Washington, April 25-27. Mr. Theodore Wiprud, 1718 M St. N.W., Washington, Executive Secretary.

Federation of American Societies for Experimental Biology, Toronto, Canada, Apr. 26-29. Dr. D. R. Hooker, 19 West Chase St., Baltimore, Secretary.

Florida Medical Association, Daytona Beach, May 1-3. Dr. Shaler Richardson, 111 W. Adams St., Jacksonville, Secretary.

Georgia, Medical Association of, Atlanta, Apr. 25-28. Dr. Edgar D. Shanks, 478 Peachtree St. N.E., Atlanta, Secretary.

Illinois State Medical Society, Rockford, May 2-4. Dr. H. M. Camp, 224 S. Main St., Monmouth, Secretary.

Iowa State Medical Society, Des Moines, Apr. 25-27. Dr. Robert L. Parker, 3510 Sixth Ave., Des Moines, Secretary.

Kansas Medical Society, Topeka, May 1-4. Mr. C. G. Munns, 112 W. 6th St., Topeka, Executive Secretary.

Louisiana State Medical Society, Alexandria, Apr. 24-26. Dr. P. T. Talbot, 1430 Tulane Ave., New Orleans, Secretary.

Maryland, Medical and Chirurgical Faculty of, Baltimore, Apr. 25-26. Dr. Walter Dent Wise, 1211 Cathedral St., Baltimore, Secretary.

Minnesota State Medical Association, Minneapolis, May 31-June 2. Dr. B. B. Souster, 11 West Summit Ave., St. Paul, Secretary.

Mississippi State Medical Association, Gulfport, May 9-11. Dr. T. M. Dye, McWilliams Bldg., Clarksdale, Secretary.

Missouri State Medical Association, Excelsior Springs, Apr. 10-12. Dr. E. J. Goodwin, 634 North Grand Blvd., St. Louis, Secretary.

Nebraska State Medical Association, Grand Island, May 2-4. Dr. R. B. Adams, 414 Federal Securities Bldg., Lincoln, Secretary.

New Mexico Medical Society, Gallup, May 11-13. Dr. L. B. Cohenour, 219 W. Central Ave., Albuquerque, Secretary.

New York, Medical Society of the State of, Syracuse, April 24-27. Dr. Peter Irving, 2 East 103d St., New York, Secretary.

North Carolina, Medical Society of the State of, Cruise to Bermuda, May 9-14. Dr. T. W. M. Long, Roanoke Rapids, Secretary.

North Dakota State Medical Association, Fargo, May 8-10. Dr. Albert W. Skelsey, 20½ North Broadway, Fargo, Secretary.

Ohio State Medical Association, Toledo, May 3-4. Mr. C. S. Nelson, 79 E. State St., Columbus, Executive Secretary.

Oklahoma State Medical Association, Oklahoma City, May 1-3. Dr. L. S. Willour, Third and Seminole, McAlester, Secretary.

Society for the Study of Asthma and Allied Conditions, Atlantic City, N. J., Apr. 29. Dr. W. C. Spain, 116 E. 53d St., New York, Secretary.

South Dakota State Medical Association, Aberdeen, Apr. 24-26. Dr. Clarence E. Sherwood, Madison, Secretary.

Tennessee State Medical Association, Jackson, Apr. 11-13. Dr. H. H. Shoulders, 706 Church St., Nashville, Secretary.

Texas, State Medical Association of, San Antonio, May 8-11. Dr. Holman Taylor, 1404 West El Paso St., Fort Worth, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1928 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

Alabama State Medical Assn. Journal, Montgomery

8: 233-272 (Jan.) 1939

The Spastic Colon. J. O. Finney, Gadsden.—p. 233.
Management of Hypertension and Pregnancy. B. H. Boyd, Atlanta, Ga. —p. 237.
Anorectal Pain: Its Clinical Significance. J. E. Linn, Birmingham.—p. 242.
Exploring the Possibilities of Afebrile Brucellosis. E. Thames, Mobile. —p. 245.

American Journal of Cancer, New York

35: 1-158 (Jan.) 1939. Partial Index

Mesonephroma Ovarii. W. Schiller, Chicago.—p. 1.
Some Transitional Gliomas. G. Levin, New York.—p. 22.
*Association of Silicosis and Carcinoma of the Lung. M. O. Klotz, Toronto.—p. 38.
Urine Extractives in Cancer. H. Sobotka and Edith Bloch, New York. —p. 50.
Occasional Neutralization of the Active Agent of Filtrable Fowl Tumors by Fluid Mediums from Tissue Cultures. R. J. Ludford, London, England.—p. 63.
Comparative Activity of Some Carcinogenic Hydrocarbons. J. M. Twort and C. C. Twort, Manchester, England.—p. 80.
Relation of Nursing to the Extrachromosomal Theory of Breast Cancer in Mice. J. J. Bittner, Bar Harbor, Maine.—p. 90.
Note on Production of Sarcomas in Hamsters by 3: 4-Benzpyrene. W. E. Gye and L. Foulds, London, England.—p. 108.

Silicosis and Carcinoma of Lung.—Klotz reviews fifty cases of silicosis observed from 1925 to 1936 in the department of pathology and bacteriology of the University of Toronto. Twenty-five of these are from the necropsy files of the department, while in twenty-five the material was submitted by the department of health of Ontario for examination. Among these fifty cases, nine instances of carcinoma of various organs were found. This figure may possibly be too low, as the material submitted by the department of health consisted in most cases of only the thoracic organs. Four of the nine tumors were primarily bronchogenic. In 4,500 necropsies performed on patients dying in the Toronto General Hospital, 808 carcinomas of all organs were found. Of these, fifty-three were primarily bronchogenic. Both these figures are considerably lower than those of the first group. The average age incidence of those showing primary lung cancers in this larger series was 52 years and nearly all were laborers. Nine had given their occupation as miners, three as metal workers and two each as laborers, gardeners, gas company employees, engineers and laundry men. Among those describing themselves as miners, only one showed evidence of silicosis. Fourteen can be considered to have pursued occupations necessitating the inhalation of air containing either dust or other foreign matter. Though it is not entirely accurate to compare a selected group of fifty cases with a control group numbering 4,500, a comparison of the figures suggests that the incidence of carcinoma of the lung in silicosis may greatly exceed that among the population at large. The symptoms exhibited by the four patients with carcinoma of the lung found in the fifty cases of silicosis were not atypical for carcinoma of the lung. Dyspnea, cough, substernal pain, hemoptysis and loss of weight and strength were the prominent complaints. The duration of symptoms varied from three weeks to four years, with an average of twenty-five months. In case 4 the respiratory complaints were masked by those produced by metastatic destruction of various bony structures. In cases 1 and 3 bloody pleural fluid was obtained on thoracocentesis. In no instance was an x-ray diagnosis made, though all the patients had been subjected to such an examination. The average age of these patients was 48 years and with one exception (five years) all had been exposed to silica for a period exceeding twenty years. In case 1, in which the exposure was only five years, the lungs showed the most advanced degree of fibrosis and on analysis yielded the highest percentage of silica (33.98 per cent). The remaining cases showed only a minimal or slight degree of fibrosis attributable to the siliceous deposits. Case 2 alone presented evidence of tuberculosis and here the infective process had taken the form of a tuberculous bronchopneumonia. All the tumors were hilar in position, arising from the main bronchi on the left in three cases and on the right in one.

American Journal of Diseases of Children, Chicago

57: 245-488 (Feb.) 1939

Sternal Marrow of Children in Normal and in Pathologic States. P. Vogel and F. A. Bassen, New York.—p. 245.
Tests of Function of Vegetative Nervous System in Acrodynia. R. Day, J. R. Smith and W. O. Klingman, New York.—p. 269.
*Extrasystoles in Children. R. A. Lyon and Louise W. Rauh, Cincinnati. —p. 278.
Gonorrheal Vaginitis of Children: Report of an Autopsy. R. A. Benson, A. Steer and F. D. Speer, New York.—p. 291.
Relation Between Plasma Protein Level and Edema in Nephrotic Children. L. E. Farr and D. D. Van Slyke, New York.—p. 306.
Congenital Enlargement of the Extremities. M. Cooperstock, Marquette, Mich.—p. 309.
*Prophylactic Use of Parental Blood Serum Against Contagion in a Pediatric Ward. L. H. Barenberg, D. Greene and M. J. H. Grand, New York.—p. 322.
Circulatory Function in Anemias of Children: II. Measurements of Blood Oxygen Content, Circulation Time and Venous Pressure. C. G. Parsons, Birmingham, England, and F. H. Wright, New York.—p. 330.
Experimental Poliomyelitis in Monkeys Lacking Olfactory Nerve Connections with Central Nervous System Produced by Intravenous Injection of Virus. J. A. Toomey, Cleveland.—p. 338.
*Distribution of Vitamin D in Body After Administration of Massive Doses. H. Vollmer, New York.—p. 343.

Extrasystoles in Children.—Lyon and Rauh detected extrasystoles in thirty-five of 782 children attending children's cardiac disease clinics, in three of 5,114 newborn infants, in forty of 1,782 school children selected by the physicians of the schools from a school population of about 85,000 as having some cardiac abnormality, and in seven of 709 children in a single elementary school. Of 2,672 children with normal hearts, extrasystoles occurred in fifty-nine (2.2 per cent); of 468 patients with cardiac lesions the irregularity was observed in twenty (4.3 per cent). In some instances rheumatic fever, diphtheria, congenital heart disease or emotional or nervous instability seemed to be a predisposing cause of the condition, but usually no evident cause of the extrasystoles could be determined. According to the electrocardiograms of twenty-two children, the extrasystoles were ventricular in origin in sixteen, nodal in three and auricular in three. In only one patient was the origin multifocal. In a series of forty-two patients who were observed for periods of from one month to ten years the extrasystoles occurred at only one examination in thirteen instances and for from one to five months in fourteen others, from six to eleven months in four, from twelve to twenty-three months in six and more than two years in the remaining five. There was no evidence that the presence of extrasystoles, by themselves, either caused any impairment of cardiac function or retarded the growth and development of the child.

Parental Serum Against Contagion.—Barenberg and his associates used parental blood serum regularly in an active pediatric ward as a prophylactic measure against measles, diphtheria and scarlet fever. Each child admitted to the medical pediatric ward received from 20 to 30 cc. of parental blood serum. The serum was readily absorbed without any untoward effects. The surgical ward served as a control. The use of parental serum maintained a constantly open ward free from outbreaks of contagious disease, preventing the spread of these disorders among already sick children. This prophylactic measure also decreased the number of hospital days in the medical pediatric ward.

Distribution of Vitamin D in Body.—Vollmer determined the vitamin D content of the organs of a child who died of tuberculous meningitis and miliary tuberculosis. Three and a half days before he died the child was given 600,000 U. S. P. units of vitamin D orally. At this time he was still in a condition which probably allowed the absorption of most of the vitamin. Most of the vitamin was stored in the skin, liver and brain. The kidney contained less vitamin. No appreciable amounts of the vitamin were found in the lungs, spleen or bones.

American Journal of Medical Jurisprudence, Boston

2: 1-72 (Jan.) 1939

Police Crime Prevention Activity. O. W. Wilson, Wichita, Kan.—p. 1.
Determination of Compensation Liability: The Physical Examination and Collateral Medicolegal Factors. L. H. Childs, Flint, Mich., and C. D. Selby, Detroit.—p. 9.
The Technical Investigation in Cases of Electrical Injury. A. W. Weeks, Boston.—p. 12.
Carbon Monoxide, Chlorides in Drowning, Alcoholism. F. Stratton, Boston.—p. 21.
Crime and Justice. S. Glueck, Boston.—p. 25.
The Lay Roentgen Laboratory: Responsibility of Referring Physicians. I. S. Trostler, Chicago.—p. 37.
The Business Problems of the Medical Profession. J. A. Slaughter, San Francisco, and L. S. Trigg, Los Angeles.—p. 39.
The "Buck" Kelly Case. L. L. Stanley, San Quentin, Calif.—p. 45.
Mental Disorders in the Course of Bullet Wounds of the Brain: Their Medicolegal Relationship. M. Rinkel, Brookline, Mass.—p. 49.

American J. Obstetrics and Gynecology, St. Louis

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Incidence of Anovulatory Menstruation Among Patients of Low Fertility. J. Rock, M. K. Bartlett and D. D. Matson, Brookline, Mass.—p. 3.
*Degree of Normal Menstrual Irregularity: Analysis of 20,000 Calendar Records from 1,500 Individuals. L. B. Arey, Chicago.—p. 12.
*Retinal Examinations: Guide in Management of Toxic Hypertensive Syndrome of Pregnancy. R. D. Mussey and B. J. Mundell, Rochester, Minn.—p. 30.
Effects on Blood from Injections of Endocrine Principles in the Female. C. A. Hill, Pittsburgh.—p. 47.
Effect of Quinine-Calcium on Uterine Motility. J. R. Johnson, Brooklyn.—p. 94.
Routine Roentgen Pelvimetry in 600 Primiparous White Women Consecutively Delivered at Term. H. Thoms, New Haven, Conn.—p. 101.
Role of Hysterectomy in Production of Menopausal Symptoms. A. L. Dippel, Baltimore.—p. 111.
Endometrial Patterns in Dysmenorrhea. J. Kotz and Elizabeth Parker, Washington, D. C.—p. 116.
Effect of Pregnancy and Corpus Luteum on Vesical Muscle. O. R. Langworthy and C. B. Brack, Baltimore.—p. 121.
Hematometra. P. Bernstein and R. Walter, New York.—p. 126.
*Insulin Treatment of Dysmenorrhea. Edna Watt Schrick, Lincoln, Neb.—p. 146.
Effect of Irradiation on the Function of the Ovary in Young Girls. I. I. Kaplan, New York.—p. 158.
Treatment of Vaginal Moniliasis with Silver Picrate. H. A. Shelanski and F. M. Kern, Philadelphia.—p. 161.

Normal Menstrual Irregularity.—Some 20,000 calendar records of menstrual cycles from about 1,500 women and girls, as given in twelve different studies, have been assembled, corrected and analyzed by Arey. The commonest length of 8,462 cycles (furnished by 585 persons) is twenty-eight days both for puberal girls and for adult women. The average length of all cycles is 33.9 days for girls and 28.4 days for women. The commonest length of 17,652 cycles (the grand mode of the individual modes of 1,265 persons) is divided between thirty and thirty-one days for puberal girls and is twenty-seven days for adult women. The mean length of cycle, based on individual averages, is 33.6 days for girls and 29.5 days for women. The maximal departures of individuals from their means extends from one to sixty-nine days in adults and from six to 211 days in puberal girls. In several hundred adults more than 21 years old, a fluctuation of about ± 2.5 days with respect to the mean expresses the limits of variability which contain two thirds of all cycles. Expressed differently, an average adult woman must expect one third of all her cycles to depart more than two days from her mean cycle length. The amount of variability shown by adults is greater than is ordinarily credited. Cycles ranging from two or three weeks to seven or more weeks appear in all of the groups (17 to 49 years) from which data have been collected. In the records of more than 500 women, 27 per cent never showed their own means during the observation period, which averaged eleven cycles. Only 20 per cent experienced their own mean in at least one third of their recorded cycles. The adults, reported in detail by eleven investigators, represent all ages from late adolescence to approaching menopause. They include American, Canadian, British, German and Hungarian subjects and various grades of society. In no instance did perfect menstrual regularity appear over any significant period of time; this is all the more noteworthy since many individuals had previously declared themselves to be the acme of invariability. It seems improbable that menstrual regularity, in any true sense of the word, ever will be encountered over significant periods of time. Certainly, not the slightest evidence pointing toward perfect regularity has so far been produced for even a single exceptional individual. Should such a person be found at some future time, she will constitute a true medical curiosity. Studies on the monkey and chimpanzee disclose menstrual irregularity comparable to that of the human being.

Retinal Examinations.—Mussey and Mundell point out that the weight of evidence indicates that acute late toxemia of pregnancy presents a hypertensive syndrome, characterized by generalized spasm of the smaller arteries. The degree of the spasm appears to parallel the height and duration of the blood pressure and the severity of the toxemia. Examination of the arterioles of the retina reveals changes which apparently manifest the degree of angiospasm throughout the body. In addition to hypertension and other symptoms, the presence and persistence of noticeable retinal vascular spasm is a guide in the management of late toxemia. This often indicates the need of avoiding further generalized and, perhaps, permanent vascular damage by terminating pregnancy when the condition of the patient permits. On the contrary, retinal changes of comparatively mild degree, or their absence, may indicate that pregnancy may be allowed to continue in the hope of obtaining a living infant without unduly jeopardizing the health and life of the mother.

Insulin Treatment of Dysmenorrhea.—Schrick gave regular insulin for from two to three months to ten college students from 16 to 29 years of age with dysmenorrhea. The insulin was given for from three to five days before each menstrual period. The menstrual periods of these women were regular and normal in all respects except for the association of pain of varying degrees of severity. Eight of the ten patients were benefited subjectively while under treatment, and three have had several menstrual periods free from pain without the use of insulin. The author has succeeded in relieving the cramplike pains of dysmenorrhea with a single injection of from 5 to 7 units of regular insulin given during the attack of dysmenorrhea with a supply of carbohydrate to counteract the antidiabetogenic effect of the insulin. This corroborates Altschul's observations. At present the author believes that insulin therapy in functional dysmenorrhea is successful because of its effect on the ovaries. The insulin treatment of this common complaint appears of value, but the subject needs further investigation.

Archives of Pathology, Chicago

27: 1-200 (Jan.) 1939

Aplastic Anemia, with Special Reference to the Significance of the Small Lymphocytes. H. E. Jordan, Charlottesville, Va.—p. 1.
Membrane Formation at Lipoid-Aqueous Interfaces in Tissues. G. M. Hass, Boston.—p. 15.
Argentaffin (Carcinoid) Tumors of Small Intestine: Report of Eleven Cases and Review of the Literature. I. M. Ariel, New York.—p. 25.
Malignant Cells in Serous Effusions. J. R. McDonald and A. C. Broders, Rochester, Minn.—p. 53.
Negative Chemotropism in Leukocytes. M. McCutcheon, D. R. Coman and H. M. Dixon, Philadelphia.—p. 61.
*Pituitary Fibrosis with Myxedema. B. Castleman and S. Hertz, Boston.—p. 69.
Walker 256 Rat Mammary Carcinoma in Vitro: Further Observations. W. R. Earle, Washington, D. C.—p. 80.
Use of Strip-Shaped Explants in Tissue Cultures. W. R. Earle, Washington, D. C.—p. 88.
Malignant Tumor of the Great Omentum Simulating a Glomangioma. J. D. Kirshbaum and S. L. Teitelman, Chicago.—p. 95.
Production of Renal Calculi in Guinea Pigs by Feeding Them a Diet Deficient in Vitamin A. M. Steiner, B. Zuger and B. Kramer, Brooklyn.—p. 104.
Inflammation: XVII. Direct Effect of Changes in the Hydrogen Ion Concentration on Leukocytes. V. Menkin, Boston.—p. 115.
Cardiac Muscle in Idiopathic Hypertrophy of the Heart in Infancy and in Normal Growth. G. J. Dammin and R. A. Moore, New York.—p. 122.
Estrogens in Carcinogenesis. W. U. Gardner, New Haven, Conn.—p. 138.

Pituitary Fibrosis with Myxedema.—Castleman and Hertz cite a case of pluriglandular insufficiency without cachexia, clinically believed to be a case of myxedema. Except for the absence of cachexia, all the postmortem observations (fibrosis of the anterior lobe of the pituitary and atrophy of the thyroid, parathyroid, adrenal, ovary and uterus) are characteristic of Simmonds' disease. Pathologic and experimental evidence is presented which establishes primary disease of the anterior lobe of the pituitary in the pathogenesis. It is important to recognize that chronic pituitary insufficiency may exist.

Such a condition should be suspected in all cases of typical myxedema or in cases of myxedema in which earmarks of other endocrine deficiencies are present. A negative thyrotropic assay of blood or urine in the untreated state of myxedema should suggest a primary deficiency of the pituitary.

Connecticut State Medical Society Journal, Hartford

3: 51-104 (Feb.) 1939

Mesenteric Cysts. R. E. Dunne, Hartford.—p. 54.
*Testosterone for Treatment of the Eunuchoid State. K. W. Thompson, New Haven.—p. 59.
What Should Be the Position of the Medical Profession in the Modern State? D. P. Griffin, Bridgeport.—p. 61.
Sciatic Neuralgia. B. S. Brody, New Haven.—p. 66.
Technic, Physiology and Results in the Application of Therapeutic Hyperpyrexia. I. Kopp, Boston.—p. 68.
Bromide Intoxication. P. W. Preu, New Haven.—p. 75.

Testosterone for Treatment of the Eunuchoid State.—Thompson states that the greatest success with testosterone has been obtained in eunuchoid patients who have either failed to attain normal sexual development or who have been castrated by accident or surgical necessity. The optimal dosage for a eunuchoid adult is approximately from 50 to 75 mg. of testosterone propionate weekly, divided in two or three doses. After a preliminary saturation with the compound the maintenance dose may be lowered. Some patients develop a tolerance to the drug, so that later the maintenance dose has to be raised. The patients are instructed to make the injections and they adjust the dosage to their needs. Beneficial effects are observed from two to ten days after the injections are begun. Excessive doses have produced priapism, an increase in body weight and a generalized puffy edema, acne of the face and trunk and precordial pain. The latter symptom was so pronounced in one patient that the treatment had to be abandoned. No other untoward results have been reported, but more time must pass in order to evaluate the results and the dangers of the treatment. The drug is an effective therapeutic agent the clinical application of which deserves further study. It may prove to be an indispensable natural form of therapy in cases of primary deficiency of the testes. In other disorders having a psychic or constitutional origin, in which the testes are either secondarily or only apparently involved, the results may be harmful or ineffective. This drug is now being sold in many drug stores, at which it can be purchased without a prescription. At present the cost of this material and the lack of public knowledge of its action temporarily serve to prevent its unsuitable exploitation. New and cheaper methods for its synthesis will probably be developed and this with the public's knowledge of its psychic, emotional and physical effects may bring about the necessity for controlling its sale. The principles of therapy with testosterone are not sufficiently well established to recommend its use by the physician in general practice. For a time, at least, it should continue to be studied in the clinic having the guidance of physicians who have had experimental and clinical experience with the endocrine glands and the advice of a psychiatrist, whose aid may be needed to solve the many psychic problems which confront these patients.

Georgia Medical Association Journal, Atlanta

28: 1-46 (Jan.) 1939

Maternal Mortality. S. S. Smith, Athens.—p. 1.
Some Practical Points in Meeting Poor Surgical and Anesthetic Risk in Surgical Diseases. T. J. Collier, Atlanta.—p. 4.
*Classification and Treatment of Obesity. J. K. Fancher, Atlanta.—p. 7.
Dissecting Aneurysm of the Aorta: Report of Case. T. S. Claiborne, Atlanta.—p. 12.
Surgical Treatment of Gallbladder Disease. J. C. Patterson, Cuthbert.—p. 13.
Value of Aschheim-Zondek Test in Diagnosis of Chorionepithelioma. M. T. Benson Jr., Atlanta.—p. 16.
Encroachments on Physicians' Rights. A. A. Rayle, Atlanta.—p. 18.
Odd Allergic Cases. M. A. Ehrlich, Bainbridge.—p. 20.

Classification and Treatment of Obesity.—Fancher classifies obesity as exogenous, endogenous or mixed. Insufficient function of the thyroid, pituitary and ovaries may cause obesity. Hyperinsulinism is also a cause of overweight. Diets based on ideal and not actual weight are valuable. People are fully conscious of the value of a trim figure, though they may desire it more from the standpoint of beauty rather than from the standpoint of comfort and health. Men are more lax than women in their attention to girth control and yet, as the chief wage earners, they should be the ones most vitally interested in this life-lengthening factor. There is just as much adipose tissue stored within the body around the vital organs as there is under the skin. Frequently a man will consult his physician for shortness of breath and a choking sensation on exertion or after a full meal, when the trouble is not primarily cardiac in origin but due to an excessive accumulation of adipose tissue about the heart and lungs and within the abdomen. A definite reduction in weight brings about a prompt and refreshing relief from the dyspnea and choking.

Journal of Immunology, Baltimore

36: 1-82 (Jan.) 1939

Serologic Studies of the Reptilia: I. Hemagglutinins and Hemagglutinogens of Snake Blood. G. C. Bond, Lawrence, Kan.—p. 1.
Id.: II. The Hemolytic Property of Snake Serum. G. C. Bond and N. P. Sherwood, Lawrence, Kan.—p. 11.
Acquired Specific Supersensitivity (Allergy) to Simple Chemicals: IV. Method of Experimental Sensitization; and Demonstration of Increased Susceptibility in Individuals with Eczematous Dermatitis of Contact Type. M. B. Sulzberger and A. Rostenberg Jr., New York.—p. 17.
Simple and Inexpensive Apparatus for the Desiccation of Biologic Materials from the Frozen State. H. W. Scherp and T. P. Hughes.—p. 29.
Nonspecific "Desensitization" Through Histamine. L. Farmer, New York.—p. 37.
Quantitative Relation of Fibrinolysin and Antifibrinolysin. B. F. Massell, J. R. Mote and T. D. Jones, Boston.—p. 45.
Factors Affecting Quantitative Relation of Fibrinolysin and Antifibrinolysin. J. R. Mote, B. F. Massell and T. D. Jones, Boston.—p. 59.
Differences in Hemolytic Streptococcus Antifibrinolysins. J. R. Mote, B. F. Massell and T. D. Jones, Boston.—p. 71.

Journal-Lancet, Minneapolis

59: 37-84 (Feb.) 1939

Nonparasitic Cysts of the Liver. F. F. Attix, Lewistown, Mont.—p. 38.
Limitations of the Nonpadded Plaster Cast. J. A. Evert, Glendive, Mont.—p. 42.
Impalement of the Rectum. J. H. Garberson, Miles City, Mont.—p. 44.
*A Safer Technic in Cholecystectomy. T. L. Hawkins, Helena, Mont.—p. 47.
Intravenous Urography as an Aid to Surgery: Improved Method for Better Visualization of the Upper Urinary Tract. L. L. Howard, Great Falls, Mont.—p. 49.
Postgraduate Surgical Study in Edinburgh. W. A. Wright, Williston, N. D.—p. 51.
Ectopic Pregnancy. C. W. Schoregge, Bismarck, N. D.—p. 54.
Penetrating Foreign Body Wounds of the Knee Joint. C. J. Glaspel, Grafton, N. D.—p. 56.
Pseudocysts of the Pancreas. R. E. Weible, Fargo, N. D.—p. 58.
*Accurate Determination of Compatible Blood for Transfusion. A. L. Cameron, Minot, N. D.—p. 60.
Treatment of Ruptured Duodenal Ulcer. S. A. Donahoe, Sioux Falls, S. D.—p. 63.
Actinomycosis of Head and Neck: Pathology, Diagnosis and Treatment. O. S. Randall, Watertown, S. D.—p. 64.
The Prone Position for Gravity Drainage of the Abdomen. T. F. Riggs, Pierre, S. D.—p. 68.
Educational Opportunities in Student Health Programs. C. E. Shepard, Palo Alto, Calif.—p. 70.

Cholecystectomy.—Hawkins enters a plea for a more or less routine procedure for cholecystectomy by downward dissection. He states that this procedure may be slower and, if the cystic artery is not previously clamped, more bloody; but he feels that these objections are negligible if such a procedure will lessen the number of inadvertent injuries to the common and hepatic ducts. After the abdomen is opened and the gallbladder is brought into the field, the liver may be manually rotated or the falciform ligament clamped and used as a retractor to tip the under surface of the liver to a more unobstructed view. The fundus of the gallbladder is grasped with rubber covered forceps and traction is applied upward. An elliptical incision is made about the grasping forceps through the peritoneal covering of the gallbladder. With small forceps the peritoneum is grasped and held by an assistant. The initial incision is continued down the inferior surface of the gallbladder and on to the cystic duct. Blunt dissection with small forceps is continued to free the gallbladder from the liver, and any troublesome bleeding points are cut and clamped. Gauze dissection is not used at any time. As the dissection proceeds downward, another rubber covered forceps may grasp the gallbladder lower to bring the cystic duct more directly in the operative field. The cystic artery should be ligated separately and for as long as possible so that

its ligated end may be finally closed over with peritoneum. When the junction of the cystic duct with the common duct is clear and distinct the cystic duct is doubly clamped, severed with a cautery and doubly ligated with chromic ligature. Stones may be palpated or the common duct explored at this time, a complete change of abdominal moist packs being inserted as a quarantine. If there is no jaundice present, the common duct is of normal size, no stones are palpable and aspiration reveals clear light colored bile further exploration is not necessary. The peritoneal flap resected from the gallbladder and cystic duct is sutured continuously over the stump of the duct and the ligated cystic artery along the bed of the liver, so that complete peritonealization of the gallbladder area is obtained. The abdomen in the absence of common duct drainage is closed without drainage, the only exception being when the gallbladder has been torn inadvertently. In draining the common duct there are several pitfalls to be avoided: the incision in the duct need not be larger than to permit the insertion of a folded T drain or the removal of stones. Meticulous attention should be given to the condition of the rubber T tube. It should be thoroughly tested and inspected before insertion to ascertain that the rubber is vital and that no leaks are present.

Compatible Blood for Transfusion.—Cameron outlines the technic used at Trinity Hospital for the determination of the compatibility of blood for transfusion. The technic is a modification of the Landsteiner test tube method. Preliminary typing is carried out in order to reduce the number of compatibility tube tests necessary for selecting a donor. The typing and cross matching are not directly involved in this final determination, which concerns only the reactions seen in the test tubes. Ten test tubes are arranged in numerical order in a rack. Into the first five tubes is placed 0.1 cc. of a 5 per cent saline suspension of the donor's erythrocytes. To tubes 1, 2 and 3 is added the recipient's serum in the following amounts respectively: 0.1, 0.2 and 0.4 cc. and 0.4 cc. of the donor's serum is added to tube 4. Into tubes 6, 7, 8, 9 and 10 is placed 0.1 cc. of a 5 per cent saline suspension of the recipient's erythrocytes. To tubes 6, 7 and 8 is added the donor's serum in the following amounts, respectively: 0.1, 0.2 and 0.4 cc. and 0.4 cc. of the recipient's serum is added to tube 9. Physiologic solution of sodium chloride is added to the ten tubes in amounts sufficient to make the content of each equal to 1 cc. In tubes 1, 2, 3, 6, 7 and 8 occur the cross reactions between the serum of both the donor and the recipient in three different dilutions and their erythrocytes. In tubes 4, 5, 9 and 10 occur control reactions between serum and erythrocytes of the same origin in saline solution and between the saline solution and the erythrocytes alone of both the donor and the recipient. After preparation, the tube mixtures are allowed to stand for one and one-half hours, as delayed reactions are not uncommon. In approximately 4 per cent of tests between bloods of the same group incompatibility is found which is usually due to agglutination but occasionally to hemolysis. If the macroscopic evidence of agglutination is at all doubtful a microscopic examination is carried out. The author states that this test tube method has been relied on at Trinity Hospital for more than 1,200 transfusions performed during the last six years. No reactions of incompatibility have occurred. The extra time and effort which the test requires is fully justified by its incomparable superiority as a laboratory procedure on which life depends.

Journal of Nervous and Mental Disease, New York

89: 133-272 (Feb.) 1939

Notes on the Psychology of Metrazol Treatment of Schizophrenia. P. Schilder, New York.—p. 133.
Cerebral Mechanisms. J. W. Papez, Ithaca, N. Y.—p. 145.
Postural Alterations in the Upper Extremity, with Some Comments on the Pyramidal Tract and Human Erect Posture. A. M. Rabiner, Brooklyn.—p. 160.
Hereditary Word-Blindness as a Defect of Selective Association: Case Report. W. Marshall, Appleton, Wis., and J. H. Ferguson, Ann Arbor, Mich.—p. 164.
*Vitamin B Deficiency and Nervous Diseases. F. H. Lewy, Philadelphia.—p. 174.

Vitamin B Deficiency and Nervous Diseases.—The epitome that Lewy presents on the relation of nervous disease and vitamin B deficiency is as follows: 1. Changes in the electrical irritability of the peripheral motor nerves apparently are the first clinical signs of a B avitaminosis. 2. At the same time the pyruvic acid increases in the blood and urine, indicating a gradual vitamin B deficiency. 3. Simultaneously also the ketone bodies increase in the blood and urine, indicating a gradual exhaustion of glycogen. 4. The neuropathy can be cured by the administration of vitamin B as well as by the reconstruction of the glycogen stocks through the administration of carbohydrates supplemented by insulin. 5. The liver is the greatest storehouse of vitamin B and of glycogen. 6. The liver loses four fifths of its vitamin B stock in the first week of a diet deficient in vitamin B. 7. The liver proves to be severely damaged pathologically in such diseases in which a neuropathy or myelopathy is present. 8. After exhaustion of the "mobile" liver vitamin, its "fixed" depot in the nervous system begins to decrease. At this moment the nervous symptoms appear. 9. Clinical, pathologic and experimental experience suggests strongly that in diseases of the spinal cord, of the basal ganglions and of the hemispheres a vitamin B deficiency may also play a part. Considering these facts, it seems difficult to overlook the central position of the liver in the mechanism of the occurrence of certain nervous diseases. The liver harbors and eventually loses not only vitamin B but also A, C, D and others. For example, in lead poisoning one finds—in addition to the nervous signs which alone attract one's attention—paradontoses and final loss of the teeth due to an A avitaminosis, a tendency to hemorrhages producing the severe pains in the calves known from vitamin C deficiency and eventually an increased fragility of the bones. The neuropathies and myelopathies usually do not appear as accompaniments of the basic disease but after an interval of weeks, months and even years, as in the postencephalitic parkinsonism. They represent the metanosic type of disease, in other words an after-disease. The problem of the origin of nervous diseases should not be oversimplified by creating a new collection box labeled "B avitaminosis."

Medical Annals of District of Columbia, Washington

8: 1-30 (Jan.) 1939

Comments on the Interpretation of Blood Pressure Measurements. L. B. Laplace, Philadelphia.—p. 1.
Lunacy Procedure Under the New Law. A. E. Marland, Washington.—p. 6.
Injection Treatment of Hernia: Results in 239 Cases. R. J. Carbo, Washington.—p. 10.
Roentgenkymogram in Cardiologic Diagnosis. G. L. Weller Jr., Washington.—p. 13.
Second Annual Report of Diabetic Camp. S. Benjamin, E. C. Rice, K. H. Mish, B. Manchester and Ella Fraser, Washington.—p. 15.

New England Journal of Medicine, Boston

220: 85-128 (Jan. 19) 1939

*Treatment of Gonorrheal and Rheumatoid Arthritis with Sulfanilamide. H. C. Coggeshall and W. Bauer, Boston.—p. 85.
Peptic Ulcer Considered from a Surgical Point of View. A. W. Allen and C. E. Welch, Boston.—p. 103.
Syphilitic Hepatitis with Jaundice: Report of Case. L. E. Parkins, Boston.—p. 106.
Note on Drainage of the Prevesical Space. R. Chute, Boston.—p. 108.
Streptococcic Disease. C. S. Keefer, Boston.—p. 109.

Treatment of Arthritis with Sulfanilamide.—Coggeshall and Bauer treated fourteen cases of proved and four of probable gonorrheal arthritis, two cases of gonorrhea and two cases of proved and two of probable gonococcic prostatitis with sulfanilamide. Sulfanilamide administered in large doses for two or more weeks appeared to be a specific chemotherapeutic agent for certain strains of gonococci because: 1. Infected synovial fluids can be sterilized in from forty-eight to seventy-two hours after the institution of therapy. 2. In seventeen of the eighteen cases in which a proved genito-urinary focus existed, no gonococci were found after the third day of treatment. These cases remained clinically cured during the follow-up periods. 3. The gonococcus complement fixation test failed to become positive in three cases of gonorrheal arthritis in association with infected synovial fluids. In nine of the remaining eighteen cases the complement fixation test became negative. 4. Nine of the proved and two of the probable cases of gonorrheal arthritis showed striking clinical improvement in from forty-eight to seventy-two hours after therapy was begun. 5. The end results in the fourteen proved and the four probable cases of gonorrheal arthritis were more satisfactory and took place in shorter periods of time than occurs with other forms of therapy. The toxic manifestations resulting from the administration of large doses of

sulfanilamide do not represent serious complications (except for the hematologic changes) and are corrected promptly when the drug is discontinued. A slow, progressive, subclinical hemolytic anemia occurred in thirteen of the twenty-eight cases. Leukopenia was observed in two cases. The erythrocyte sedimentation rates fell rapidly in the cases of gonorrheal arthritis showing striking and immediate relief.

New York State Journal of Medicine, New York

39: 101-190 (Jan. 15) 1939

Surgery in Hyperthyroidism. F. H. Lahey, Boston.—p. 108.
*Kidney Function in Hyperthyroidism. E. C. Bartels, Boston.—p. 117.
Concerning Oxygen Want in Pilots Flying at 12,000 Feet Altitudes. A. L. Barach, New York.—p. 121.
Report of Case of Boeck's Sarcoid with Constitutional Symptoms, Eye, Glandular, Pulmonary and Skin Lesions. L. F. Frissell and W. T. Medl, New York.—p. 124.
Drug Therapy in Some Common Otolaryngologic Conditions. R. Almour, New York.—p. 128.
"Status Thymicolymphaticus": Unusual Clinicopathologic Observations. T. C. Wyatt, Syracuse.—p. 132.
"Get Them Back"—Surgical Lessons from the War. C. W. Cutler Jr., New York.—p. 141.
Outline of Treatment for Syphilis: Methods and Technic Followed in the Department of Dermatology of the Vanderbilt Clinic: Part II of a Series. A. B. Cannon, New York.—p. 145.
Is the Practice of Medicine Becoming Too Scientific? W. A. Groat, Syracuse.—p. 157.

Renal Function in Hyperthyroidism.—Bartels states that hyperthyroidism, no matter how severe, does not affect or alter renal function as determined by the urea clearance test. In only six of twenty-three cases was the urea clearance test below the range of normal. This was of a minor degree; since five of the six occurred in patients more than 50 years of age, this change can be explained as some minor vascular renal disturbance common to patients of this age. No relationship was found between the urea clearance and the type of hyperthyroidism (either exophthalmic or adenomatous goiter), duration of disease, loss of weight, level of the basal metabolic rate or severity of the disease as indicated by the type of operative procedure employed. Patients with hyperthyroidism in the absence of cardiac failure or preexisting nephritis tolerate an abundance of fluid intravenously. The results also probably disprove the presence of a hepatic-renal syndrome, for, in spite of severe degrees of changes in hepatic function which have been found in cases studied at the Lahey Clinic, the kidney has escaped alteration in its function.

Psychiatric Quarterly, Utica, N. Y.

13: 1-202 (Jan.) 1939

Electro-Encephalography. F. Lemere, Seattle.—p. 5.
The Therapeutic Promise of Foster Family Care for the Mentally Ill: Some Observations on Technic, Results Obtained and Potentialities, with Brief Case Summaries. N. J. T. Bigelow and Eva M. Schied, Utica, N. Y.—p. 16.
*Thyroid Therapy in a Series of Epileptics. G. J. Doolittle, Sonyea, N. Y. —p. 33.
The Involutional (Mental) Syndrome. G. M. Davidson, New York.—p. 42.
Pellagra: Report of Two Cases in Psychotic Patients. Alma Freeman, Poughkeepsie, N. Y.—p. 83.
Prostigmine Treatment of Myasthenia Gravis. F. M. Miller Jr., Utica, N. Y., and H. H. Dodds, Marcy, N. Y.—p. 90.
Technic of Insulin Shock and Metrazol Treatments. L. L. Bryan, Marcy, N. Y.—p. 96.
Results of Metrazol Therapy in Schizophrenia. N. Beckenstein, Brooklyn. —p. 106.
Insulin and Metrazol Therapy in Identical Twins. J. M. Murphy and H. Luidens, Willard, N. Y.—p. 114.
Subsequent Course in Series of Fifty-Five Insulin-Treated Patients. D. Ruslander, Buffalo.—p. 123.
Treatment of Schizophrenia with Sympathomimetic Drugs: Benzedrine Sulfate. E. Davidoff and E. C. Reifenstein Jr., Syracuse, N. Y.—p. 127.
Literacy and Mental Disease. B. Malzberg, Albany, N. Y.—p. 145.
*Comparative Study of Psychoses Among Negroes and Whites in the New York State Prisons. S. C. Karlan, Dannemora, N. Y.—p. 160.
Are Mental Diseases on the Increase? The Problem of Determination. H. B. Elkind, Boston.—p. 165.

Thyroid Therapy in Epilepsy.—In order to determine the primary effect on seizures and the secondary effects on basal metabolism, blood sugar, weight, tremor, blood pressure or pulse rate, Doolittle gave at first 0.032 Gm. and then 0.065 Gm. of thyroid extract to forty-seven patients with epilepsy. During administration the number of attacks increased in 53 per cent of the patients, decreased in 36 per cent and did not change in 10 per cent. In twenty-one patients the number of seizures increased for the three months following the withdrawal of the drug, and thirteen of these returned to the pretreatment level nine months after withdrawal. An increase in the basal metabolic rate was observed in 91 per cent of the patients, an increase in blood sugar in 63 per cent, a loss of weight in 64 per cent, only 36 per cent showed tremor and 93 per cent showed a decrease in blood pressure; 84 per cent of the patients in whom a disproportionate fall of diastolic pressure was observed had increased attacks and 65 per cent showed increase in pulse rate. There seemed to be no relationship between the rapidity of the pulse and the number of attacks. About half of the patients were receiving phenobarbital. This sedation seemed to have no influence on the frequency of attacks under thyroid extract. The author feels that an improvement with respect to the number of attacks while under thyroid treatment was evident in from 35 to 40 per cent of the patients. From 60 to 65 per cent appeared to be made worse by the drug. Approximately the same percentages existed in correlating seizures with changes in basal metabolic rate, blood sugar, weight, blood pressure or pulse rate, and with incidence of tremor. A patient subject to unstable diastolic blood pressure or a diastolic blood pressure easily decreased by thyroid extract should not be given this drug.

Psychoses Among Negroes and White Persons in Prisons.—Karlan investigated all the first admissions to the Dannemora State Hospital from the New York State prisons from June 30, 1928, to June 30, 1938. These included 687 white persons and 188 Negroes. During these ten years there were 25,538 white and 5,494 Negro commitments to the institutions of the New York State Department of Correction. From his observations the author concludes that the incidence of psychoses in the general population is higher in Negroes than in white people. In the New York State prisons, Negroes and white prisoners are in a similar cultural and economic environment. The incidence of functional psychoses among Negro inmates is about the same as that among white prisoners. Negroes have therefore no racial predisposition to mental disease. The high incidence of mental disease among them is probably due to cultural, social and economic causes. The incidence of psychoses among prison inmates is from five to ten times as high as that of the general population. This is mostly due to the inherent constitutional instability of the criminal group.

Public Health Reports, Washington, D. C.

54: 59-94 (Jan. 20) 1939

Basal Metabolism Tests on Disturbed Patients. C. K. Himmelsbach and Othilia T. Mertes.—p. 63.
Do Case Records Guide the Nursing Service? M. Derryberry.—p. 66.

54: 95-148 (Jan. 27) 1939

Studies in Chemotherapy: VIII. Some Toxic Effects of Repeated Administration of Sulfanilamide and Sulfanilyl Sulfanilamide ("Disulfanilamide") to Rabbits and Chickens. S. M. Rosenthal.—p. 95.
Histopathologic Changes in Hens and Rabbits Following Administration of Sulfanilamide and Sulfanilyl Sulfanilamide (Disulfanilamide). A. A. Nelson.—p. 106.

Review of Gastroenterology, New York

6: 1-78 (Jan.-Feb.) 1939

Relation of Traumatism to Peptic Ulcer. E. L. Kellogg and W. A. Kellogg, New York.—p. 1.
Studies on Humans with a New Secretogogue Meal. R. Upham and F. Spindler, New York.—p. 12.
Effect of Banana Feeding on Intestinal Flora and on Constipation in Children and Adults. L. Weinstein and M. Bogin, New Haven, Conn. —p. 21.
Food Allergy of the Digestive System. J. S. Smul, New York.—p. 26.
Angina Pectoris: Introduction. A. S. Hyman, New York.—p. 35.
Treatment of Angina Pectoris. J. B. Wolffe, Philadelphia.—p. 36.
Relation of Gastrointestinal Disorders to Angina Pectoris and Other Acute Cardiac Conditions. W. A. Swalm and L. M. Morrison, Philadelphia.—p. 41.
Cardiovascular Factors in Angina Pectoris. V. A. Digilio, Philadelphia. —p. 46.
Pharmacology and Bio-Assay of Insulin-Free Pancreatic Extracts. J. C. Munch, Philadelphia.—p. 50.
Hepatic Insufficiency. M. E. Binet, Vichy, France.—p. 53.

Virginia Medical Monthly, Richmond

66: 65-128 (Feb.) 1939

Washington's Predilection for Doctors and Doctoring. W. A. Wells, Washington, D. C.—p. 65.
Recollections of a Country Doctor. M. O. Burke, Richmond.—p. 68.
Experience with Prostatic Resection. E. W. Kirby and J. H. Neff, Charlottesville.—p. 73.
Hemochromatosis: Study of Three Cases. N. Bloom, Richmond.—p. 79.
Treatment of Painful Lesions of Anorectum in General Practice. G. W. Ault, Washington, D. C.—p. 86.
Psychiatric Aspects of Physical Illness. J. R. Blalock, Marion.—p. 92.
Hydatid Mole: Case Report. W. P. Barnes, Richmond.—p. 94.
Correlation Between Pediatrist, Psychiatrist and Psychologist. W. B. McIlwaine, Petersburg.—p. 96.
The Blood Smear in Differential Diagnosis. J. H. Scherer, Richmond.—p. 99.
Herniation of the Intervertebral Disk: Report of Two Cases. J. T. Rountree, Front Royal.—p. 103.
Review of Literature on Mesenteric Adenitis. J. M. Emmett, M. Fliess and F. H. Yorkoff, Clifton Forge.—p. 105.
Leukopenic Index in Pediatric Allergy. P. Hogg, Newport News.—p. 108.
What Our Patients Think. A. J. Russo, Baltimore.—p. 109.

Western J. Surg., Obst. & Gynecology, Portland, Ore.

47: 1-54 (Jan.) 1939

Pituitary Gland in Relation to Metabolism. J. B. Collip, Montreal.—p. 1.
*Influence of Pituitary in Thyroid Disease. W. O. Thompson, Phebe K. Thompson, S. G. Taylor 3d and Lois F. N. Dickie, Chicago.—p. 4.
Malignant Tumors of Thyroid Gland: Study of Eighty-Eight Cases. H. Welti and R. Huguenin, Paris, France.—p. 10.
Perforated Peptic Ulcer. H. G. Willard, Tacoma, Wash.—p. 23.
Leiomyosarcoma of Stomach: Perforation. C. J. Baumgartner, Los Angeles.—p. 27.
The Surgical Approach to Hypertension: Division III. F. M. Findlay, San Diego, Calif.—p. 31.

Influence of Pituitary in Thyroid Disease.—Two years ago the Thompsons and their collaborators reported that in about 50 per cent of patients showing various levels of thyroid function a temporary increase in basal metabolism could be produced by pituitary extracts containing the thyrotropic factor. They now extend and confirm these observations. Out of 123 courses of injections to 106 patients of all types, the basal metabolism was increased by 10 points or more in fifty-six instances. Considering only the initial series of injections, an increase was observed in fifty-one instances. The response was always temporary in spite of continued administration. The observations suggest that the maintenance of normal thyroid activity depends to some extent on factors outside the thyroid, among which the function of the anterior lobe of the pituitary plays an important part. They are consistent with the hypothesis that hypothyroidism may be of two types, primary and secondary. In the primary type the hypothyroidism is the result of loss of thyroid tissue by operation, atrophy or infection. It is seen in patients with marked myxedema, who show characteristic and complete improvement with the administration of desiccated thyroid. The secondary type is caused by lack of adequate stimulation of the thyroid, notably by the anterior lobe of the pituitary, and is seen in patients suffering from hypofunction of this gland, in Simmonds' disease and in certain pituitary tumors associated with a low basal metabolism. Hyperthyroidism, like hypothyroidism, may be secondary to a corresponding state in the anterior lobe of the pituitary. In twelve patients with myxedema and basal metabolism varying from minus 31 to 47 per cent, no increase in basal metabolism was produced by the administration of anterior pituitary extracts containing the thyrotropic factor. In about half of ninety-four other patients showing various levels of thyroid function from moderate hypothyroidism to marked hyperthyroidism, increases in basal metabolism of from 10 to 53 points were produced. The magnitude of the response appeared to be related to the level of metabolism before treatment was started, being greatest in the patients with mild hypothyroidism and least in the patients with hyperthyroidism. In nineteen patients with basal metabolic rates of from minus 29 to plus 8 per cent the rate was raised as high as 36 per cent above normal, and various manifestations of hyperthyroidism were produced: tachycardia, nervousness, tremor, emotional disturbances, weakness, ease of fatigue, loss of weight, increase in perspiration and increase in the size of the thyroid.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

1: 51-96 (Jan. 14) 1939

Outbreak of Psittacosis at the London Zoological Gardens. A. G. Troup, R. Adam and S. P. Bedson.—p. 51.
The "Medical Appendix" in Children and Adults. R. Miller.—p. 56.
Treatment of Gonorrhea by Ureron: Review of 120 Male Cases. C. H. Wilkie.—p. 57.
*Treatment of Sterility: Report on Sixty-Two Cases. Margaret Moore White.—p. 62.
Auricular Fibrillation and the Thyroid. E. G. Slesinger.—p. 65.

Treatment of Sterility.—Between August 1937 and June 1938, sixty-two women who attended an outpatient department for sterility were observed and treated by White. Forty-seven of them complained of absolute sterility, nine of one child sterility, one that she could not become pregnant with a second husband (although she had had four children by the first husband) and five that they had had one or more miscarriages. By September 1938, twenty-two patients were pregnant—that is, 47.8 per cent of those in whom pregnancy was possible, since sixteen patients either had nonpatent fallopian tubes or their husbands were known to be sterile. Of the twenty-two who became pregnant seven miscarried, but two are now pregnant again. Of the remaining twenty-four women who have not yet become pregnant it is assumed that in 21 per cent the husband is sterile, judging from the result of the thirty-nine whose semen was examined; but this still leaves a number of women in whom so far pregnancy has not occurred though study of both partners has been favorable. Iodized poppyseed oil by itself has a therapeutic value in that it opens up the fallopian tubes. It would seem to be of greater use than air insufflation, because the latter ceases to distend as soon as the pressure is reduced. Forty patients injected with the oil received no glandular therapy and thirteen became pregnant. There was tubal occlusion or sterility of the husband in fourteen of these forty cases, so that a 50 per cent success can be attributed to the injection of the oil alone. It is known that the failure of many patients to conceive is due to failure of ovulation, and it is claimed that ovulation is more likely to occur after suitable administration of endocrine products. Dihydroxyestrin benzoate given in two weekly doses of 20,000 international benzoate units in the two weeks directly following the menstrual period, or as a larger dose of 50,000 international benzoate units about the twelfth day of the menstrual cycle, appears to have had some value. In cases in which the uterus is undersized, nidation of the fertilized ovum is more likely to occur if further development is brought about by more regular and prolonged glandular therapy. Failure of the fertilized ovum to embed is one of the causes of sterility. Investigation on the pregnandiol (excretion product derived from the corpus luteum) content in the urine at the time of ovulation in sterile patients is being undertaken. Insufficiency of the latter substance may be dependent on an insufficiency or an unbalanced output of anterior pituitary hormones. Sterility may depend on an incorrect balance between the follicular and luteinizing factors of the anterior pituitary gland. It is hoped that in time one may be able to isolate the hormones from the gonadotropic substance present in the urine of pregnant women and inject them into sterile women. Thyroid insufficiency (in both parties) may account for sterility, since Lawrence and Rowe (1928) have shown that 39 per cent of a series of patients with some degree of thyroid insufficiency were sterile. The treatment of as many as possible of the existing causes of sterility at the same time raises the fertility level and renders pregnancy more likely.

Edinburgh Medical Journal

46: 1-60 (Jan.) 1939

Surgery of Malignant Disease of the Colon. D. Wilkie.—p. 1.
Cancer. J. J. M. Shaw.—p. 17.
Medical Education and Hospital Policy in Edinburgh. L. S. P. Davidson.—p. 20.
Intracranial Tuberculoma. N. M. Dott and E. Levin.—p. 36.
Some Observations on the Practice of Medicine. H. Douglas-Wilson.—p. 42.
Some Biochemical Factors of Influenza and Other Viruses. M. Copisarow.—p. 46.

Lancet, London

1: 69-128 (Jan. 14) 1939

New Bones for Old. E. W. H. Groves.—p. 69.
Intestinal Stricture and Megalocytic Anemia. J. F. Brock.—p. 72.
*The Case for Prophylaxis with Sulfanilamide and Sulfapyridine. E. D. Hoare.—p. 76.
Dermatomyositis. A. W. Hendry and T. E. Anderson.—p. 80.
Acute Dermatomyositis Associated with Reticulo-Endotheliosis. J. H. Sheldon and Freida Young, histologic findings by S. C. Dyke.—p. 82.
Tetany in a Suckling with Latent Osteitis Fibrosa in the Mother. C. Friderichsen.—p. 85.
Spinal Leptomeningioma: Restoration of Function After Operation. R. M. Hill and J. Prentice.—p. 87.

Prophylaxis with Sulfanilamide Compounds.—Hoare records experimental data which appear to justify clinical trial of sulfanilamide derivatives in the prophylaxis of hemolytic streptococcus infections. Prophylactic immunization may be indicated under certain circumstances in maternity work, in association with tonsillectomy in a patient known to be a carrier of hemolytic streptococci and possibly to avert a dangerous extension of infection when operating on the mastoid or other acutely infected tissues. The possibility of prophylactic immunization in obstetric practice does not in the least warrant any abandonment of antiseptic or aseptic technic in the conduct of labor. The author found that mice can be protected against an infection by hemolytic streptococci (from 100 to 1,000 minimal lethal doses intraperitoneally) by the subcutaneous injection of a single dose of sulfapyridine within the previous forty-eight hours. With sulfanilamide a single subcutaneous prophylactic injection has but little effect, owing to its greater solubility, but good protection is obtained if, in addition to the prophylactic dose, the drug is given orally twice a day for three days after the infection by hemolytic streptococci. Repeated administration is necessary after infection if sulfapyridine is given orally. A high bactericidal power was demonstrated in the blood of uninfected patients during the puerperium, three under treatment with sulfapyridine and six with sulfanilamide. The suggested dosage is 1 Gm. of sulfanilamide or of sulfapyridine orally three times a day, beginning as soon as labor starts and continuing for three or four days.

Practitioner, London

141: 693-804 (Dec.) 1938

Modern Treatment of Pneumonia in General Practice. G. E. Beaumont.—p. 693.
Management of Chronic Bronchitis in the Winter. F. H. Young.—p. 700.
Clinical Aspects of Influenza. J. G. Scadding.—p. 712.
Vaccines and the Common Cold. D. Embleton.—p. 725.
Winter Diarrhea in Infants. S. Graham.—p. 733.
*Skin Diseases in the Winter. H. D. Haldin-Davis.—p. 741.
Diet in Health and Disease: XVIII. Diet in Winter and Summer. V. H. Mottram.—p. 747.
Treatment of Pain in Severe Injuries. H. Balme.—p. 757.
Some Pains of Significance to the Surgeon. H. Dodd.—p. 765.
External Diseases of the Eye in School Children. A. Furniss.—p. 771.
Industrial Eye Injuries. J. Minton.—p. 782.
Prevention and Control of Puerperal Sepsis. W. C. W. Nixon.—p. 785.
Note on an Outbreak of Gastro-Enteritis at Haslemere, Surrey. J. E. Haine.—p. 789.

Cutaneous Diseases in the Winter.—Haldin-Davis considers the cutaneous diseases of winter under three divisions: the effects produced by cold alone, the results of exposure to conditions of cold and damp and the effects of cold on preexisting dermatoses. Frostbite is due to the action of cold, especially of dry cold, and its effects are often increased by the wind. Three degrees of severity are described: hyperemia and damage to the cutaneous capillaries, edema of the dermis and an infiltration of leukocytes, and complete thrombosis of the blood vessels of the subcutaneous tissue and necrosis through the whole depth of the skin. Foremost among the results of exposure to cold and damp are trench foot, chilblains and erythrocyanosis crurum puellarum. Most preexisting cutaneous troubles are aggravated by exposure to cold. This is noticeably true of ichthyosis, psoriasis, most forms of eczema and allergic conditions, and also lupus erythematosus. On the other hand, acne vulgaris tends to improve during the cold weather.

Journal de Chirurgie, Paris

53: 1-160 (Jan.) 1939

*Spontaneous Hemoperitoneum in Men. H. Mondor and C. Olivier.—p. 1.
Several Failures of Gastro-Enterostomy Treated by Separation of Gastro-Enterostomy and Gastrectomy in One Session. J. Sénèque.—p. 14.
Five Cases of Gastrojejunocolic Fistulas: Operation in Two Stages; Surgical Technic. G. Lœwy.—p. 30.
Case of Fatal Tetanus Following Provoked Abortion Apparently Beginning by Luxation of Jaw. G. Desbonnets.—p. 49.

Spontaneous Hemoperitoneum in Men.—Mondor and Olivier say that for a long time spontaneous hemoperitoneum was regarded as peculiar to women in that it is usually traceable to extra-uterine pregnancy. Spontaneous hemoperitoneum in men was regarded as extremely rare but the authors show that it does not deserve this reputation of extreme rarity. A review of the literature revealed more than 400 cases of spontaneous hemoperitoneum. This number includes those observed in men and those of nongenital origin in women. Classification of these according to their causes reveals that 251 were of splenic origin (rupture of the spleen in malaria, typhoid, recurrent fever, leukemia, tumor, infarct and so on); 122 were of vascular origin (rupture of aneurysm of the splenic artery, rupture of the hepatic artery, of the abdominal aorta, of the vessels of the stomach, of the splenic vein, of the superior mesenteric artery and so on); forty-four were of hepatic origin (rupture of the liver or of a hepatic tumor or aneurysm) and fifteen cases were of obscure origin. The authors show that the clinical diagnosis of spontaneous hemoperitoneum is not impossible if it is thought of. They discuss the symptomatology and the methods of examination that may prove helpful in detecting it but admit that in many instances the discovery of the hemoperitoneum is still a surgical surprise. In this event it is necessary to explore first the splenic region and, if this exploration proves negative, the liver and the other possible sites of the hemorrhage must be investigated. Favorable surgical results are possible, particularly if the blood comes from the spleen or from an artery of the stomach.

Presse Médicale, Paris

47: 121-136 (Jan. 25) 1939

Animated Bases of Pulmonary Suppurations and Their Spasmogenic and Vasomotor Action. M. Loeper, M. Perrault and J. L. Herrenschmidt.—p. 121.
*Use of Sulfanilamide in Urinary Infection with Colon Bacilli. C. J. Gessler and A. Lippens.—p. 124.

Sulfanilamide in Urinary Infection with Colon Bacilli.—Gessler and Lippens report therapeutic experiences with paraminophenylsulfamide in thirty-eight cases of urinary infections with colon bacilli. The patients presented clinical symptoms, not merely colibacilluria. In nineteen of the patients the disorder was acute, in the others it was chronic. The authors give brief clinical histories of each of the patients. In all acute cases the oral administration of the paraminophenylsulfamide produced cure within several days. The fever and the disturbances of micturition often disappeared from the second day of the treatment, whereas the urine became normal again several days later. The authors recommend the administration of 3 Gm. a day during the first forty-eight hours and 2 Gm. daily thereafter for a period of from five to eight days. In one of the nineteen acute cases a relapse occurred which, however, could be readily counteracted by a new series of treatments with sulfanilamide. In some of the patients with chronic urinary infection the disorder had proved refractory to other therapeutic methods, but in only one of them did the urinary infection prove resistant to the sulfanilamide therapy. The dosage in the chronic cases is practically the same as in the acute cases; that is, the patients are given 3 Gm. for two days and then 2 Gm. daily until the urine becomes normal. After that the medication is continued for a few days with 1.5 Gm. In this connection the authors point out that some observers advise interruption of the treatment after two weeks so as to prevent the development of a resistance to the medicament in the micro-organism. Because the efficacy of the sulfanilamide seems to be improved by an alkaline milieu, the authors administer with each dose 0.5 Gm. of sodium bicarbonate; this is the more advisable because the sulfanilamide tends to produce acidosis. The patient

should not drink too much during the treatment, so that the concentration in the urine does not drop too low. The authors conclude that sulfanilamide is highly effective in urinary infections with colon bacilli.

47: 137-152 (Jan. 28) 1939

*Attempt to Treat Arterial Hypertension of Renal Origin by Surgical Vascularization of the Kidney (Nephro-Omentopexy). P. Abrami, M. Iselin and R. Wallich.—p. 137.

Treatment of Burns by Infra-Red Rays. J. Gautier.—p. 139.

Revascularization of Kidney in Arterial Hypertension.—Abrami and his associates point out that numerous surgical attempts have been proposed to cure or to improve progressive chronic arterial hypertension. This multiplicity of interventions suffices to show their slight value, whether the intervention is a unilateral or a bilateral section of the splanchnic nerves, a unilateral adrenalectomy, a renal decapsulation or an enervation of the renal and adrenal pedicles with or without ablation of the first and second lumbar aorticorenal ganglions. All these technics, whether employed alone or in combination, produce only temporary and inconstant improvements. After discussing factors that are probably responsible for the failure of these treatments, the authors cite investigators who have proved that renal ischemia plays an important part in the pathogenesis of certain forms of hypertension. This renal ischemia seems to be independent of nervous factors, for it may appear even after enervation of the kidney; that is, the vascular factor is the decisive one. To combat the renal ischemia efficiently, surgical interventions, different from those heretofore employed, seem necessary. A procedure which creates a new vascular plexus in the kidney appears to be the solution for this problem of renal ischemia. The authors point out that the revascularization of an ischemic organ has already been successfully carried out. In this connection they cite the work on the revascularization of the ischemic myocardium carried out by Beck in America and by O'Shaugnessy in England. Heymans and his collaborators in Ghent transferred the experiences made on the heart to the sphere of the kidney. They demonstrated on dogs that by an artificial revascularization, obtained by a renoperitoneal anastomosis, it is possible to counteract the hypertension that is brought on by renal ischemia. The authors resorted to this measure for the first time in two human subjects. They designate their intervention as nephro-omentopexy. They expose the kidney by a lateral transverse incision; they decapsulate it, open the peritoneum and draw a well vascularized portion of the omentum through a window in the posterior parietal peritoneum. They lightly scarify the antero-external surface of the kidney and suture the omentum to it. They report two cases in which they employed this procedure. They gained the impression that the operation had been made too late and that, in order to produce results, nephro-omentopexy must be performed on both sides. However, in spite of failure at the onset, the authors conclude that this method is not only possible in human subjects but easy to perform and not harmful.

Sang, Paris

13: 1-112 (No. 1) 1939

Leukemic Reticulosarcoma. Š. Váradi.—p. 1.

*Employment of Venin of Bothrops Atrox as Hemostatic. C. J. Hanut.—p. 21.

Multiple Myeloma. J. R. Grosgurin.—p. 30.

Venin of Bothrops Atrox as Hemostatic.—Following a review of the literature on the use of venins for hemostatic purposes, Hanut describes his studies with a dry venin of Bothrops atrox and with an antibothropic serum prepared with the aid of the venin of Bothrops jararaca. On the basis of his studies he reaches the following conclusions: 1. The venin of Bothrops atrox can be used in hemophilic subjects either in dilute solutions or mixed with an appropriate dose of antibothropic serum. Under these conditions it is deprived of its coagulating toxicity and it does not produce secondary incoagulability. On the contrary, it preserves a slight coagulating action for at least six hours. It is to be recommended especially before a surgical operation on hemophilic subjects. 2. The venin of Bothrops atrox is useless and contraindicated in the majority of hemorrhagic disorders without disturbances of the coagulation, because it is either without effect on the time of bleeding or else it even prolongs it. 3. Because of the thrombinic action of the venin of Bothrops atrox in vitro, which transforms the fibrinogen into fibrin without interfering in the normal mechanism of coagulation, it appears that the employment of the venin of Bothrops atrox as a local hemostatic should be given serious consideration.

Rassegna Internazionale di Clinica e Terapia, Naples

22: 45-92 (Jan. 31) 1939

Senile Involution of Appendix and Sclerotic Atresia in Chronic Appendicitis. L. Sanguigno.—p. 47.

Benign Lymphocytic Meningitis: Case. G. Ceruti.—p. 57.

*Venous Septicemia. C. Cantieri.—p. 63.

Venous Septicemia.—According to Cantieri, venous septicemia is a clinical entity which includes not only subacute forms which have been heretofore described but also benign and acute forms. The condition is due to an early selective location of bacteria in the venous system. Phlebitis develops successively at different segments of the veins of the extremities or of the viscera in the course of recurrent attacks of fever and of a pulmonary disease with small foci of pneumonia or bronchopneumonia. The evolution of the condition depends on (1) the intensity of the general infection which causes septicemia, (2) the extension of the vascular lesion, (3) the segment of a vein which is involved (whether peripheral or visceral and superficial or deep) and (4) the intensity of the consequent circulatory disturbances. The condition is restricted to small septic foci and spreads by small foci. Mild forms involve predominantly the veins of the limbs and subside at resolution of phlebitis after two or three recurrences of moderate intensity. Subacute forms may show predominant pulmonary or vascular peripheral symptoms. They follow a long evolution and may be complicated by acute forms. Periphlebitis or thrombophlebitis in periarticular veins is grave. Acute forms are rapidly fatal from the first attack. The most important forms are those of the monoplegic, quadriplegic and phlegmatic types, as well as the type of pulmonary infarct which causes hemoptysis and those which develop with either bronchopneumonia or pleurisy or in the course of pulmonary tuberculosis. The author gives examples of each of the different types. The differential diagnosis of these forms is of importance, as subacute forms can derive benefit from an opportune surgical treatment.

Archivos de Medicina Infantil, Havana

8: 1-82 (Jan., Feb., March) 1939. Partial Index

Treatment of Erysipelas in Infants with Sulfanilamide and Its Derivatives. G. Cardelle y Penichet.—p. 34.

Treatment of Purulent Meningitis with Sulfanilamide. G. García Montes, A. J. Aballí and F. Hernández Calzadilla.—p. 45.

*Treatment of Gonococcic Vulvovaginitis in Little Girls with Sulfanilamide. A. J. Aballí, J. G. Cabrera Calderín and J. M. Labourdette Scull.—p. 64.

Sulfanilamide in Treatment of Vulvovaginitis.—Aballí and his collaborators made a comparative study of the results of sulfanilamide and other different treatments on a group of thirty girls ranging in age from 3 to 9 years who were suffering from gonococcic vulvovaginitis. The infection was at about the same stage of acuteness in all cases. All the patients were hospitalized. Sixteen of the patients were given sulfanilamide orally in three daily fractional doses up to a total daily dose of from 0.6 to 1 Gm. for each 10 pounds (4.5 Kg.) of body weight. The drug was given in series of seven or eight consecutive days followed by periods of rest lasting from three to seven days. The course of treatment consisted of two series and in rare cases three series. No other treatment was given except in one case. The patient was given santonin for intestinal parasitism in the course of the treatment. Acute jaundice followed. Recovery was obtained in twelve of the sixteen cases in an average of twenty-five days. One patient had spontaneous regression six months after failure of the treatment, which failed in three cases. Fourteen patients were given one or several of the following treatments: vaginal antiseptic irrigations, local application of bactericidal substances including fuchsin, vaccines, pyretotherapy or injections of estrogenic substances. Four of the patients recovered in an average of ninety-six days. The treatment was of no benefit to the rest of the patients of the group. The author therefore concludes that sulfanilamide in the proper dosage is of value in the treatment of vulvovaginitis in little girls. The treatment is well tolerated. The administration of any other drug in the course of the treatment is contraindicated. The patients who are going to obtain satisfactory

results show a prompt favorable reaction, which consists in diminution of the clinical symptoms and rapid disappearance of the vaginal discharge. It is advisable to continue the treatment for at least one or two complete series regardless of early satisfactory results. Rest is a factor of importance. Some patients, in the proportion of one to four, do not respond to the treatment. If satisfactory results are not obtained in the course of the first, second or even the third series, the treatment should be discontinued.

Kinderärztliche Praxis, Leipzig

10: 53-100 (Feb.) 1939. Partial Index

*Characteristic Syndrome of Infection with Influenza Bacilli. H. Kleinschmidt.—p. 53.
Congenital Cystic Bronchiectases During Early Childhood. Matheja and Schäfer.—p. 58.
B_1 Avitaminosis (Beriberi) in Nursling: Case. T. Varga.—p. 63.
Uliron in Treatment of Gonorrhea in Children. O. Ammermann.—p. 66.
Functional Test of Heart and Electrocardiography. P. Laurentius.—p. 69.
Prophylaxis of Rickets in Nurslings. Goebel.—p. 77.

Characteristic Syndrome of Infection with Influenza Bacilli.—Kleinschmidt directs attention to a characteristic syndrome of infection with influenza bacilli, which was first brought to his attention in 1930. The syndrome begins with laryngeal stenosis; then follows a suppurating pericarditis and pleuropneumonia. In one of the cases observed by the author and in two cases that were reported by Baumeyer a suppurating meningitis developed. These cases terminated in death. Recently the author observed the aforementioned syndrome in a boy aged 6½ years. In this case, however, the process remained localized; the suppurating meningitis, which is due to bacteremia, did not develop. The syndrome was restricted to laryngeal stenosis, bronchopneumonia, suppurating pericarditis and pleural empyema on the right side. This patient was cured. The author says that he described these cases not in the interest of rare casuistics but rather because the syndrome is characteristic and recurs in an analogous manner. It is caused by a pharyngeal infection with influenza bacilli, which apparently spreads by way of the mediastinum. Exact and systematic bacteriologic tests are essential in this disorder.

Klinische Wochenschrift, Berlin

18: 41-72 (Jan. 14) 1939. Partial Index

*Influence of Insulin on Glycogen Formation from Dextrose in Normal Animals. C. Brentano.—p. 42.
*Liver and Elimination of Vitamin A in Urine. W. Thiele and S. Seedorf.—p. 51.
Pathologic Physiology of Resected Stomach. F. Brauch.—p. 53.
Anterior Lobe of Hypophysis and Metabolic Function. M. Reiss.—p. 57.
Specificity of Widmark's Method of Determination of Alcohol in Blood. J. Gutschmidt.—p. 58.
Immunobiologic Evaluation of Active Vaccination of Children Against Diphtheria by Alum Toxoid. G. Paschlau.—p. 60.
Gel of Blood Plasma as Culture Medium. R. Bucher.—p. 62.
Increasing Activity of Gonadotropic Substance by Ascorbic Acid. B. Gięd osz.—p. 63.

Influence of Insulin on Glycogen Formation.—Brentano says that it was recently observed that the capacity to produce glycogen from dextrose is impaired not only during pancreatic and starvation diabetes but also in all disorders that are accompanied by creatinuria. Thus it was proved that a metabolic disorder heretofore regarded as specific for diabetes mellitus is not always the result of an insulin deficiency. The author decided to investigate whether insulin is capable of improving this impairment in the glycogen formation, even if it is not directly traceable to insulin deficiency. He investigated the glycogen formation in the musculature and liver after rabbits had been starved for twenty-four hours and then had been given 10 Gm. of dextrose for each kilogram of body weight. This quantity of dextrose was divided in half, and in order to insure a better resorption the second half was given two hours after the first half. The dextrose was given either alone or in combination with insulin. The glycogen content was tested five hours after the administration. Summarizing, he says that if 0.5 unit of insulin is administered for each gram of dextrose the glycogen content of the musculature is approximately 38 per cent greater and that of the liver is 20 per cent smaller than if the dextrose is given alone. If the insulin dose is reduced, the difference between the glycogen content of musculature and liver is much less pronounced. If the quantity of insulin is reduced to 0.01 unit for each gram of dextrose, there is hardly any difference from the exclusive administration of dextrose. In the concentration in which the insulin still exerts an influence on the glycogen formation, it never increases but always decreases the glycogen storage in the liver.

Liver and Elimination of Vitamin A.—Thiele and Seedorf point out that studies on the elimination of vitamin A in the urine have demonstrated that the normal organism does not eliminate this vitamin in the urine and that the diseased organism does this only under certain conditions. After citing investigators who detected vitamin A in the urine of patients with cancer, tuberculosis, general infections, lobar pneumonia, renal disorders and particularly hepatic disturbances, the authors say that, in studies on the causes of the urinary elimination of vitamin A, liver and kidney have always been regarded as having an important part. It cannot be doubted that the liver is important in the vitamin A exchange, for in the healthy as well as in the diseased organism vitamin A is found chiefly in the liver. Although the results of some investigations have directed attention to the importance of the reticulo-endothelial system in the elimination of vitamin A, the authors decided to investigate, on clinical material, under what conditions the impaired liver causes the elimination of vitamin A in the urine and to what extent the elimination of vitamin A can be utilized diagnostically. In the search for a suitable test method they found that the Carr-Price reaction is the most reliable, provided sufficiently large quantities of urine are used. In single tests vitamin A often fails to appear in spite of the fact that there is occasional elimination. Surveying the results of their studies, the authors conclude that the elimination of vitamin A is not pathognomonic for hepatic disturbances as such, for it may occur even in the presence of an intact hepatic function. Thus conclusions regarding the condition of the liver cannot be drawn from the outcome of the vitamin A reaction in the urine. However, the authors point out that experimental studies on animals have directed attention to the reticulo-endothelial system and that their own clinical observations suggest that an impairment of the reticulo-endothelial system might be the cause of the elimination of vitamin A.

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Densely Disseminated Deposits of Calcium Salts in Indurated Scar Tissue in Tuberculosis of Renal Pelvis. J. Račić and B. Gruber.—p. 305.
Manometry of Urinary Bladder (Cystometry). H. Heusser.—p. 312.
Roentgenologic Visualization of Seminal Vesicles in the Living. M. Martini.—p. 326.
*Rehberg's Functional Test of Kidney. G. Klurfeld.—p. 340.
Role of Eosinophil Cells in Diseases of Prostate with Especial Consideration of Its Inflammatory Processes. N. Vondra.—p. 357.
Extravesical Orifice of Ureter. H. U. Gloor.—p. 363.

Rehberg's Functional Test of Kidneys.—Klurfeld directs attention to the functional test of the kidneys that was described by Rehberg in 1926. He reviews the filtration-reabsorption theory on which Rehberg based his functional test of the kidneys. According to this theory the glomeruli extract from the plasma by ultrafiltration a fluid which, with the exception of the plasma proteins, contains all substances in the same quantities as does the blood plasma. In the course of its passage through the tubules this preliminary urine undergoes essential changes which are the result of two functions of the cells of the tubules. 1. The cells of the tubules have an active resorptive capacity for substances that are vitally important for the organism; for instance, chlorides and dextrose. 2. Substances that are of less importance for the organism are diffused through the cells of the tubules. In Rehberg's functional test, creatinine is employed because it has the highest concentration index; that is, it is excreted by the kidneys in maximal quantities and apparently is not reabsorbed. The author shows that by determinations of the creatinine contents of the blood and urine and by measuring the quantity of urine it is possible to compute (1) the index of concentration, (2) the quantity of filtrate from the glomeruli and (3) the quantity of resorbent retained by the tubules. After discussing the technic of Rehberg's test, which is used for theoretical purposes, the author shows that for practical purposes the method can be somewhat simplified. The person whose

renal function is to be tested has to refrain from eating or drinking beginning with the evening of the day preceding the test. At 8 a. m. 2 Gm. of creatinine is given in 500 cc. of water. This comparatively large quantity of water is given in order to maintain an adequate diuresis. At 9 a. m. the bladder is evacuated either spontaneously or by catheterization and a specimen of blood is withdrawn. After another forty minutes has elapsed, the bladder is once more evacuated and blood is again withdrawn from the cubital vein. The quantity of urine is measured in order to determine the filtration per minute. After small quantities of potassium oxalate and of sodium fluorite have been added to both of the blood specimens, they are centrifuged and, of the quantities of plasma thus obtained, equal amounts are combined and mixed and then are examined for the creatinine, urea and sodium chloride content. The author is convinced that with Rehberg's functional test of the kidneys results can be obtained which cannot be realized by other means.

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In memory of Professor V. Bie

Fight Against Diphtheria and Ramon's Vaccination Against Diphtheria. K. Bojlén.—p. 59.

*Vaccination of 1,000 Student Nurses Against Diphtheria with Investigation of Relation Between Antitoxin Content of Blood and Morbidity. P. Plum.—p. 67.

*Comparative Investigations on Primary Serous Meningitis and Paralytic Poliomyelitis. H. C. A. Lassen.—p. 73.

*Poliomyelitis in Denmark in 1937, with Special Regard to Epidemiologic Relation and Localization of Pareses. H. C. A. Lassen.—p. 80.

*Pfeiffer's Meningitis Treated with Sulfanilamide (Streptamide). A. Eldahl.—p. 88.

Vaccinia Generalisata. A. Eldahl.—p. 89.

*Eosinophil Leukemia. S. Thomsen and P. Plum.—p. 90.

*Bunnell Reaction in Infectious Mononucleosis. S. Thomsen.—p. 98.

Pneumococcic Endocarditis (Three Cases, Two Localized Exclusively to Tricuspid Valves). H. C. A. Lassen.—p. 99.

Metabolism and Minute Volume in Normal Children and in Children with Diphtheria. P. Plum.—p. 104.

Vaccination of Nurses Against Diphtheria.—Plum says that in this vaccination at Blegdam Hospital the best method proved to be one subcutaneous injection of 1 cc. of purified anatoxin with the addition of 10 volumes per cent of aluminum hydroxide, containing from 35 to 50 precipitation units of anatoxin, followed four, five and six weeks after the injection by the application of five drops of purified anatoxin in each nostril, in all twenty-five precipitation units each time. A local reaction was absent in 8 per cent, slight or moderate in 66 per cent and marked in 26 per cent. A general reaction was absent in 64 per cent, slight or moderate in 20 per cent and marked in 16 per cent. The more antitoxin in the blood before vaccination, the more marked the local and general reactions. Of 603 not vaccinated student nurses, 57 per cent had no diphtheria antitoxin in the blood, 23 per cent had between 0.0005 and 0.10 unit per cubic centimeter and 20 per cent had 0.10 unit or more per cubic centimeter. The antitoxin content of the blood before vaccination was 0.10 unit or more per cubic centimeter in 12 per cent of 160 students; after vaccination the blood contained this amount or more in 91 per cent of the number and more than 1 unit per cubic centimeter in 58 per cent. In the six year period before vaccination was introduced eighty-four student nurses had diphtheria, with a total of 2,698 days of illness; sixteen cases were grave, one of these fatal. In the subsequent six year period, after vaccination, only eighteen cases of diphtheria occurred, with a total of 566 days of illness; four cases were grave but without noteworthy complications. The author considers the antitoxin titer a measure of immunity; in his opinion an antitoxin content in the blood of 0.1 unit per cubic centimeter probably protects against diphtheria.

Primary Serous Meningitis and Paralytic Poliomyelitis.—Lassen finds that endemic clinical paralytic poliomyelitis agrees with endemic primary serous meningitis in the apportionment as to age, sex and the different social classes and most of the symptoms and objective signs before and during hospitalization. While no certain differences between the two groups appear, the endemic cases of poliomyelitis are more seasonal than the primary serous meningitides and have an average higher cell count in the spinal fluid at the clinical start of the disease, with even decrease of the cell count from this time. In the primary serous meningitis the cell count does not reach its maximum until from the seventh to the ninth day. There is a greater tendency in the paralytic cases to increased albumin, globulin and sugar values in the spinal fluid. The majority of primary serous meningitides in Denmark are at present regarded as most probably of poliomyelitic etiology.

Poliomyelitis in Denmark in 1937.—Lassen states that the highest incidence of poliomyelitis to date in Copenhagen was in 1937. The disease was not endemic in the schools. One hundred and twenty-six paralytic cases and sixty cases of primary serous meningitis, believed to be of poliomyelitic origin, were treated at Blegdam Hospital. In at least 80 per cent of the patients with pareses the first signs of certain paresis occurred within the first six days of the disease. If after the first indications of paresis there is an interval of two or three days without progression, extension of the paresis is unlikely. About half of the paretic patients showed symptoms of disorder of the bulbopontile portion of the central nervous system, 44 per cent had paralysis of a nerve of the brain, in two thirds of these there was disorder of the facial nerve and in one sixth of the abducent nerve, and about one fourth of the patients had respiratory difficulty. Nineteen of these were treated in the respirator and two with artificial manual respiration. In two fifths of the cases there was complete restitution on discharge or complete restitution later was probable, in one fifth restitution was doubtful and in one fifth it was considered improbable. After-examination a year later in the main confirmed this prognosis. One fifth of the paretic patients died, the highest mortality being in the age group over 20. In eighteen cases death was due to respiratory paresis with complications, in seven to hyperpyrexia or bulbar paresis with respiratory difficulty. In twenty-one cases death occurred before the tenth day. In all the fatal cases bulbar symptoms were more or less prominent. Of the nineteen patients given respirator treatment six survived. The real field for the respirator, the author says, is for patients with spinal respiratory paralysis without bulbar symptoms. Most of the patients who died in the respirator showed increasing cyanosis without definite signs of circulatory insufficiency and in spite of apparently sufficient ventilation. It is suggested that in cases in which swallowing or coughing is impossible the respirator by its inspiration suction aspirates secretion from the upper respiratory passages into the smaller bronchi, thus compromising the arterial oxygen saturation.

Pfeiffer's Meningitis Treated with Sulfanilamide.—Eldahl reports that from 1920 to 1938 there were twenty-eight cases of meningitis due to Pfeiffer's bacillus, all in children, at Blegdam Hospital. In 1920 one patient recovered spontaneously; from 1921 to 1937 the mortality was 100 per cent. Of the four cases in 1938 three were treated with sulfanilamide, with recovery in two of these and transient effect in the third, fatal, case, in which the inflammation was particularly violent.

Eosinophil Leukemia.—Thomsen and Plum consider the case here reported of special interest because of the transition from typical eosinophil leukemia to a pure myeloblast leukemia, which, they say, supports the conception of this symptom complex as a special form of myeloid leukemia, and because of the microscopic establishment in the bone marrow of a cell type not described in the cases previously published. The nucleus is relatively small with sharply defined boundary, the structure close, often vacuolized and without nuclei, the protoplasm colorless or faintly blue, with a peripheral zone containing fine blue-green kernels. In some of the cells there were also eosinophil kernels like those seen in the eosinophil leukocytes in the peripheral blood. The cells in question constituted 40 per cent of the bone marrow cells on the first sternal puncture. The authors are inclined to consider them the parent cells of the abnormal eosinophil cells in the blood. Some eosinophil cells of normal structure were found in the blood and corresponding to them a number of normal eosinophil myelocytes in the bone marrow. The normal eosinophil cells are believed not to be included in the leukemic changes. Several cases of eosinophil leukemia are cited from the literature.

Bunnell Reaction in Infectious Mononucleosis.—Thomsen finds that the Bunnell reaction is a useful aid in the diagnosis of infectious mononucleosis, especially when combined with absorption according to Davidsohn, but that it fails in a not inconsiderable number of cases and a negative reaction therefore does not exclude infectious mononucleosis.